Trends in condom awareness, perceived accessibility and use among school children in Kahe wards, Kilimanjaro Tanzania, 2001-2006

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ABSTRACT

Background: The vulnerability to HIV and AIDS of school children and youth in general raised the need for school-based prevention programs that encourage safe sexual behaviour. This study was conducted as a part of the Kahe Community Health Development Project in the northern part of Tanzania.

Main objective: To describe trends over time (2001-2006) in condom awareness, perceived accessibility and use among school children in Kahe wards, Kilimanjaro region.

Methods: Cross-sectional surveys were conducted from 2001 to 2006. A self administered questionnaire was administered to standard six and seven pupils to collect the needed data on demographic characteristics, condom awareness, accessibility and use. Social Science Statistical Package (SPSS IL Inc USA version 14) and Epi Info 6 (CDC) were used for analyses.

Results: A total of 4008 pupils were participated from 2001-2006. Condom awareness among primary school pupils rose significantly from 18.1% in 2001 to 33.6% in 2006 (p for trend <0.001). From 2001 to 2006 reported condom use among from sexually active participants rose from 20.5% in 2001 to 27.6% in 2006 (p for trend <0.747). The proportion of participants reporting easy accessibility to condom increased from 9.5% in 2001 to 14.6% in 2006 (p=0.219). While males were more aware about condom and reported more condom use than females in the 2006 survey, females reported to access condoms more easily than did the males. The proportion of females' participants who knew what condom is increased with increase in age. This pattern was not prevalent among males. Moreover, participants expressed difficulties in using condom when having sexual intercourse

Conclusion: Despite the fact that condom awareness increased significantly over the survey years, both awareness and use remained low. School-based intervention activities may contribute to this positive impact to the pupils' awareness on condom, perceived condom accessibility and use. The demonstrated gender difference on condom awareness in our study calls for a need to have different interventions taking into consideration the specific needs of males and females.

OPERATIONAL DEFINITIONS

The World Health Organization (WHO) defines **young people** as those in the age range 10-24 years, comprising both **Adolescents** (10-19 years) and **youth** (15-24 years) (1).

It is important to note that the Tanzanian educational system employs the following age categorization:

Children under 6 years - preschool age

7-14 years - primary school age

15-19 years - secondary school age

>20 years - college and university age

However, in practice the pupils' ages in this study were found to be out of that range of the stipulated official categories. This is partly due to late school admission resulting from various reasons: Lack of schools where the children stay and parents do not prioritize education in relation to other economic activities that children participate in order to support their families. Possibly some pupils were not sure of their ages.

The words "pupils" and "school children" are used interchangeably in this study.

In this study a condom refers to **male condom** which is defined as a device, made of latex, or more recently polyurethane, that is used during sexual intercourse. It is put on the male partner's penis, for the purpose of preventing pregnancy and/or the transmission of sexually transmitted infections (STIs) such as gonorrhea, syphilis and HIV.

Awareness: refers to vigilance in observing some things or experience and alertness in drawing inference from what one observes, in this study therefore;

Condom awareness: refers to the ability of a student to know what condoms are, whether they have heard about condoms or seen them.

Condom accessibility: refers to the ease by which pupils may obtain condoms in their locality.

Perception of condom accessibility: refers to how condom accessibility is thought of, understood and expressed by.

In-school youth: refers to youth who attend primary school.

Trend: General direction either downward or upward of which variables of interest will take.

Self efficacy in condom use: Defined as a degree of confidence a pupil had in their ability to use condom.

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DEDICATION

I never got to see your face
or even give you a name
but in my heart, you hold a special place
and for that, I would never be the same

I'll never hear you laugh or cry
Or hold you in my arms tenderly
I'll never know the color of your eyes
But I will still love you endlessly

I never got to hold your hand
I never got to sing you a lullaby
I will never come to understand
why you went before even we see you

Your dad was waiting eagerly
He even kept a name for you
All these never happened
that burns inside of him a lot

Forever saddened upon this Earth
crying for you, our unborn child
never blessed by your birth.
But I'll be here, unable to smile

Though you have gone we will love you forever baby!

LIST OF ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
95% CI	Ninety-five percent Confidence Interval
FGM	Female Genital Mutilation
HIV	Human Immunodeficiency Virus
KCHDP	Kahe Community Health Development Project
NACP	National AIDS Control Program
NUFU	Norwegian Program for Development Research and Higher Education
N.S	Not Significant
PSI	Population Standard International
P	Probability value
SES	Socio-Economic Status
SPSS	Statistical Package for Social Sciences
SSA	sub Saharan Africa
STIs	Sexually Transmitted Infections,
TACAIDS	Tanzania commission for AIDS
UNAIDS	Joint United Nations Program on HIV and AIDS
WHO	World Health Organization

1. INTRODUCTION

1.1 Background of the study

1.1.1 Profile of Tanzania

Tanzania is located in East Africa, being surrounded by Uganda and Kenya in the north, Rwanda and Burundi in the north-west, the Democratic Republic of Congo (formally Zaire) in the west and Mozambique, Malawi and Zambia in the south. In the Indian Ocean borders Tanzania (figure 1) the East where the islands of Zanzibar and Pemba also belong to the United Republic.

Figure 1: Map of Tanzania showing Kilimanjaro region

Source: www.lib.utexas.edu/maps/africa/tanzania/gif

Population: - Tanzania is the biggest of the East African countries (Tanzania, Kenya and Uganda). It has 26 administrative regions, 21 on the mainland and 5 on Zanzibar. The Mainland has 120 administrative districts and Zanzibar has 10. According to the national census conducted in 2002 Tanzania has a population of 34 million people, 46% under the age of 15 years (2). The population growth rate is 2.92%, and the population density is 39 persons per square kilometer (1).

The economy of Tanzania depends on agriculture; with plantations of cash crops like sisal, tea, cotton, cashews and cloves that are cultivated in Zanzibar and Pemba**.** Also refined petroleum, aluminum, fertilizers and construction materials and cement are produced. Diamond, tanzanite and other gemstones are mined. Other minerals extracted in significant amount are salt, gold, gypsum, phosphate and kaolin.

Life expectancy at birth is 40.7 and 40 years for women and men respectively. Over 60% of the adult population is literate and primary education is compulsory for all children who have attained school age. Primary school enrollment is currently 90.5% (3) .

1.2 PROBLEM STATEMENT AND RATIONALE

The devastations caused by HIV and AIDS in SSA is widely acknowledged (4). It is not only a health crisis, but also affects both the social as well as the economical development of a nation as the manpower is lost. What is not as often acknowledged is the epidemic's impact on youth. With over 80% of those currently living with HIV and AIDS between the age of 15 and 24 years and 75% of these youth living in SSA, then in order to control the epidemic youth must become a focus for prevention efforts (5).

The fact that adolescents are a sexually active group makes the group vulnerable for contracting HIV and AIDS. The review of related literature suggests that among school children of both sexes there is an early onset of sexual behavior. Thus a large proportion of the sexually active children report unprotected sexual intercourse and more than one lifetime sexual partner which increases their risk of HIV infection (6-10). In Tanzania the problem of sexually transmitted infections (STIs) including HIV and AIDS among pupils is worth addressing. For example a study carried out among secondary school pupils in Bagamoyo and Dar es Salaam, Tanzania found out that though 80% of the pupils mentioned reduction of number of sexual partners as a means of AIDS prevention, only 22% mentioned condom use (6). In another study carried out in Moshi rural district in Tanzania it was found that among youth aged 15-24 years 7.5% were HIV positive, with females being twice as likely to be so compared to males (11). Another study carried out in Arusha Tanzania on condom use among adolescents found out that only 26.8% of the sampled sexually active secondary school students had ever used condoms (12). These results suggest that children in primary schools clearly constitute an important target group for AIDS prevention efforts in Tanzania.

Next to abstinence, condom represents the best method to contain or to curb this epidemic. Condoms are considered the best because they are inexpensive, easy to use, and typically have no side effects (13). Since condoms are the only effective methods of prevention of HIV transmission among the sexually active, increasing access to condoms and reducing the barriers to condom use may be an effective method for decreasing the risk of HIV transmission among adolescents.

The wide scale adoption of condoms faces several economic, institutional and cultural barriers. These barriers include limited access to affordable condoms, cultural definition of good sex, and the perception of sex as a procreative act (14).

Facing these facts, UNAIDS suggests several strategies to decrease infection rates. Among others these are: social marketing of condoms, peer education for groups with highest infection rates (such as sex workers), and voluntary counseling and testing for those who believe themselves to be infected (15). This suggests condoms are an alternative preventive measure for sexually active people including adolescents.

Studies that focus on condom related issues among primary school children have received less attention than those for the adult populations including secondary school students. Despite available evidence on the early sexual activity among primary school children, the assumption is that these pupils are too young or somewhat too innocent to involve themselves with the use of condoms. This perception brings project planners oversee the need to conduct studies among this group. A review of articles by Kaaya and her colleagues whereby they focused on articles related to sexual behaviour of school pupils published from 1987-1999. It was noted that out of 47 articles only 7 were on primary school, suggesting that only few studies focused primary schools. In Tanzania, the fact that most adolescents are found in primary school; about 86% of school aged children are enrolled in primary school and about 30% of them continue to secondary school, suggests the need for intervening at primary school level (16). In addition, these pupils complete their primary education between the ages of 14 to 18 years, at that age they might have experienced their sexual debut. Therefore, there is a need to include comprehensive AIDS education in primary school in order to impart pupils with the necessary information to successfully protect their own reproductive health.

Trend data among adolescents on awareness of condoms, accessibility among adolescents and use is crucial issue in the process of reversing HIV infection rates among adolescents for a number of reasons: (i) To understand which factors affect adolescents' use of condoms and whether these factors change over time. (ii) To inform public policy and the design of public health intervention programmes. (iii) To evaluate the effectiveness of health intervention and (iv) to assess adolescents changing behaviour and needs for health information and services (17).

In Tanzania as elsewhere in Africa, condom use promoting among school pupils in constrained by traditional cultures and religion. There are obstacles to inclusion of condoms in a school based AIDS education programs. These obstacles are parents, religious groups, school administrators and the implementing teachers themselves. Since condoms are rarely discussed in schools, it is obvious that pupils will find this important information from other sources (18).

The findings of this study will provide valuable information helping to plan future intervention. Gender differences on the desired outcome (condom awareness, accessibility and use) will highlight project planners on where to focus the intervention. The trends uncovered are likely not only to reflect success of prevention messages aimed at school children but also to monitor the progress of health promotion activities that have been made and the large amount that still needs to be accomplished.

1.3 Review of related literature

1.3.1 Global HIV and AIDS epidemic

HIV is a devastating health problem and the most dramatic epidemic of the century that has tremendously affected people's life. UNAIDS reported that half of all new infections today occur in people between the ages of 15 and 24 years. UNAIDS report which included data from behavioral trend surveys in the African, Asians and Caribbean countries revealed that, a lack of comprehensive knowledge of HIV, as well as a lack of knowledge about condom usage is contributing to an increase in HIV infections (19). The report notes several examples of the effects that lack of knowledge about and low usage of condom is having on HIV rates.

UNAIDS reported 10 million young people living with HIV/AIDS by 2005. Of this number 6.2 million live in sub-Saharan Africa and 2.2 million in Asia. Everyday an estimated 6,000 youth are infected with the virus. Globally, almost one fourth of those living with HIV are under the age of 25 years (20).

The 15th UNAIDS report identified youth and women to be among the most vulnerable groups. The report stated *for youth, knowledge and information should be the first line of defense* (21). It is through knowledge youth will be aware of the epidemic especially in the prevention aspect hence, becoming responsible for their actions by making informed choices on their sexual behaviour.

1.3.2 HIV epidemic in sub-Saharan Africa

AIDS is the leading cause of death in sub-Saharan Africa and the fourth biggest killer worldwide. In 2006, almost two thirds (63%) of all persons infected with HIV were living in sub-Saharan Africa (SSA). An estimated 2.8 million adults and children got infected in 2006, more than in all other regions of the world combined. The 2.1 million AIDS deaths in SSA represent 72% of global AIDS deaths (19).

Across this region women bear a disproportionate part of the AIDS burden: not only are they more likely than men to be infected with HIV, but in most countries they are also more likely to be the ones caring for people infected with HIV. Across the region, rates of new HIV infections peaked in the late 1990s, and a few of its epidemic shows recent declines, notably in Kenya, Zimbabwe and in urban area of Burkina Faso (19).

Consistently condom use is one of the main ways that sexually active individuals can protect themselves from HIV infection. Unfortunately, however, condom intervention efforts in sub-Saharan Africa have only limited success (5).

The prevalence of HIV and STIs are high among adolescents in sub-Saharan Africa. For example, HIV prevalence was 23% among urban South Africa girls aged 15-19 years(22) and 5% was found in rural Tanzania 19 year old women (23). These alarming results indicate the magnitude of the HIV infection among adolescents.

1.3.3 Local HIV and AIDS epidemic

The first HIV reports in Tanzania occurred in 1983 with three cases in Kagera region in the North West of the country. Meanwhile each region has felt the effects of HIV and AIDS. At the end of 2005 about 1.4 million adults and children were living with HIV in Tanzania, making it one of the most affected countries in the world. However, HIV infection levels have diminished nationwide somewhat from 8.1% to 6.5% between 1995 and 2004. According to projections, the number of new HIV infections in rural areas (where about three quarters of the country's population live) could be twice in urban areas by 2010 (4). About 98% of the adult population in Tanzania is now aware of HIV and AIDS (24). In spite of this awareness, HIV and AIDS related stigma is still one of the key challenges in the prevention and control of the epidemic.

1.3.4 HIV and AIDS in Kilimanjaro region

Kahe wards being in Kilimanjaro region has been described to be one of the high risk transmission area (25). The risk of HIV infection is due to its location close to the border with neighboring country of Kenya. High levels of business within the Kilimanjaro region in general including tourist activity of mountain Kilimanjaro bring many people from different places worldwide, which result into sexual networking and hence HIV transmission. One study among pregnant women in Moshi, Tanzania reported HIV prevalence of 6.9%. Another study in Kilimanjaro region, Tanzania reported the prevalence of Chlamydia infection, gonorrhea and pyuria among men 9.6%, 0.4% and 12.7% (26).

A population study in 1991 involving a whole village in Moshi rural district (in which Kahe wards are found) indicated overall HIV prevalence of 3.7%. In that study, the prevalence of 8.7% was found among women aged 25-29 years of age. Furthermore, results from a very recent study from Kahe wards indicated HIV prevalence of 5.6%. In that study women were found to have 2.5 times higher prevalence than men (8.0% vs. 3.2%) (27).

1.3.5 Risk behaviors among Tanzanian adolescents

Studies in different locations support the conclusion that a large proportion of youth in SSA initiate sexual activity while they are at school (28). Like in many other places in SSA, various studies from Tanzania show that a significant proportion of Tanzanian adolescents become sexually active at young ages. In a cohort study in rural Tanzania about 50% of girls and 46% of boys had their sexual debut before the age of 16, i.e. around 13 to 14 years (29). Data from Arusha and Kilimanjaro regions showed that a substantial proportion of secondary school children from standard five through seven reported having had their sexual debut (12). Furthermore, a study conducted in 1989 among secondary school students (aged 14-22 years) in Bagamoyo and Dar es Salaam found that a significant proportion of the respondents (61%) were sexually active (6). A study conducted in 1992 among primary school pupils in Arusha and Kilimanjaro regions found that 63% of the boys and 24% of the girls already had their sexual debut (12). The mean age of the pupils was 14 years, elsewhere males became sexually active at 13.9 years on average(10) . Furthermore, findings from another study have been found HIV prevalence of 7.5% among rural youth aged 15 to 19 years in Kilimanjaro region (7). Available information indicates that teenage pregnancies are common among school girls, suggesting that these girls had unprotected sex which also could have put them at risk of HIV infection (7;30;31). HIV prevalence of 0.1% in males and 0.2% in females was found among primary school pupils in Tanzania (32).

The long latency period between HIV infection and clinical symptoms of AIDS may hide the fact that many people currently suffering from AIDS might have acquired the infection during their adolescent years (33). School-based prevention programs and associated obstacles for intervention

The 1993 World Development report, identified school programs as one of the most cost effective approaches to health and development (34). The importance of school based sexual health programs in SSA is supported by the fact that they have the capacity to reach a large number of adolescents because the majority of adolescents in the region attend primary schools. In Tanzania for example, primary school enrollment ratio was 83% and 81% for males and females respectively

compared to 6% and 5% for males and females respectively enrolled in the secondary schools (35). Furthermore, studies in SSA have indicated youth initiate sexual activities while they are still in school age (28). Due to these findings school based HIV prevention program stating as early as primary school, has been viewed as necessary step to protect the general population from further infection (33;34).

Among other strategies aimed at reducing HIV infection, school based programs starting at early age in primary school has been viewed as an important step in preventing the further spread of HIV infections in the communities (5;36). In line with this, the Ministry of Education and Culture in Tanzania has introduced family life education in Tanzanian primary schools whereby HIV and AIDS and STIs are taught from standard five up to seven as a small part of the topic "human diseases" under the science subject (9;18). While earlier in the epidemic it was not allowed in Tanzania to address condoms in primary schools the topic is now integrated in the school curriculum due to the wide spread of HIV and AIDS. The aim is to encourage pupils to adopt responsible sexual behaviour in order to protect their physical and psychological health as well that of their sexual partner. However, this strategy has become a debatable issue in many communities.

Religious and moral obligation of some teachers who found discussing sexuality matters is wrong have become one of the obstacles to the fulfillment of the planned interventions in primary schools. The argument has been on the need to continue stressing on abstinence and abstinence only without caring for those who are sexually active. It was reported that some educational authorities did not allow condom education in primary school (5). Studies from Uganda and Tanzania showed that some teachers feel uneasy in demonstrating condom use (37;38). This might explain some of the failures in the promotion of condom use among school children. It was also possible that for few teachers who attempted to address condoms in classes, condoms and the role play exercises were covered superficially in the classroom.

Literature on school-based HIV and sexual health interventions in sub-Saharan Africa highlight important issues about sexual health in schools. Although, there is paucity of studies that evaluate school based HIV intervention programs, the few available studies demonstrate positive outcomes, changes in knowledge of HIV and AIDS and changes of attitudes (28). In the review studies conducted in SSA by Kaaya and colleagues, some studies reported positive changes in behaviors: Klepp et al (38), Gallant and Maticka-Tyndale (5), Harvey (39) and Fawole et al (40). It was reported in the review that successful school based programs were characterized by having a

theoretical foundation, longer duration and higher intensity as well as younger target groups than other programs (36;41).

1.3.6 Condom efficacy

Latex condoms are highly effective barriers to HIV when used consistently and correctly (42). The Center for disease control and prevention (CDC) defines consistent use of condom as using a condom at every act of sexual intercourse. Correct use means using undamaged, unexpired condoms, using only water-based lubricants, careful opening of the package, correct placement and use throughout intercourse, and correct removal of the condom after ejaculation. Tests have confirmed that latex condoms do not leak HIV in the laboratory setting. In contrast natural membrane should not be used to prevent HIV infection because they may allow HIV transmission through small pores (43). Latex condoms may also prevent HIV infection by decreasing the incidence of the STIs that may facilitate HIV transmission. Proper and consistent condom use has a proven record of effective in the prevention of sexual transmission of HIV (44). In a meta-analysis of 12 studies among sero-discordant couples, consistent condom use was 87% protective against HIV transmission compared with lack of condom use (45).

The efficacy of condoms based on reported use is much lower than their potential effectiveness, mainly due to inconsistent and improper use. In Rwanda a study of 51 sero-discordant couples found that only 18% reported condom use for every sexual act over a two year period. The high rates of sero-conversion occurred among those reporting consistent condom use (46).

1.3.7 Condom awareness and Sexual behaviour

Awareness of condom is an essential stage in promoting its use against HIV infection and unwanted pregnancies. Intervention activities in school aiming at promoting protective sexual behaviour can raise condom awareness by giving correct information about condoms. Unfortunately as mentioned earlier few studies have focused condoms in primary school students hence we consider if secondary school students have little or no awareness on condom is likely to be worse for primary school pupils as through experience as age increase exposure to sexual activity increase which also increase the likelihood of obtaining more information on protective sexual behaviour in this era of HIV and AIDS. But findings regarding the relationship between condom awareness and behavior have been inconsistent. Sexually active students in Dar es Salaam, Tanzania, who knew that condoms use prevents HIV infection, had a reduced likelihood of always

using condoms (47). However, overall awareness on condom among adolescents in SSA is low. For example, in Tanzania a study on knowledge of AIDS among secondary school pupils reported relatively few respondents mentioned condom use as a method of AIDS prevention; which reflects their awareness on condom was low (12).

School programs can improve condom awareness although public intervention such as media, health personnel may result in increasing condom awareness as well; A study from Uganda have shown that pupils may be aware of condoms even when AIDS education is not a subject in school (37). One study in Tanzania showed that only 22% of participants mentioned condom use as a protective method against HIV and other STIs (6).

1.3.8 Condom use among adolescents

In Tanzania youth engage themselves in risk sexual behaviour and because the rate of condom use has been found to be low, there is increasing risk of not only unwanted pregnancies but also HIV infection (48). Prevention being the main strategy as a response to AIDS, condoms use is an integral and essential part of comprehensive prevention and care programs and their promotion must be accelerated. However, one study from Tanzania showed that only 26.8% of sexually active secondary school students have ever used a condom, and only 21% used condom in their last sexual encounter (12). This lower proportion suggests more should be done to promote safer sex among sexually active school children.

In The review of studies conducted in SSA by Gallant and Maticka-Tyndale suggest that knowledge and attitudes are easiest to change, while behaviors are more challenging. In order to improve condom use it is important that pupils should be able and have intention to use condoms. Self-efficacy however, can be increased through observing role models or participating in social skills training including how to use condoms since knowledge about condom use is an important factor if this strategy is to be effective in preventing HIV infection. In that review it was reported that students in many programs were generally positive about condom use (5).

Although a positive attitude on condom does not necessary indicate high condom use but is an important determinant for condom use.

Many factors have been shown to influence condom use among adolescents, including negative experiences with prior use, risk-taking behaviors, perception of condom efficacy, and self-efficacy in obtaining and using condoms (49). A study from South Africa suggested reasons for the lack of condom use among high school students included inadequate knowledge and misconception about condoms, lack of availability and access to condoms, and perception that condoms were a barrier to sexual pleasure, incompatible with the notion of manliness and perceived by partners as a lack of trust in faithfulness and love (50). A widespread viewpoint is “do you eat a banana with its skin?” *(unakula ndizi na maganda yake)* or “do you think a candy is good with paper around it?”*(unafikiri pipi ni tamu ukila na ganda lake?)* are some of the words commonly used in Tanzania to express negative attitudes towards condom use. In a study among secondary school students in Tanzania, it was observed that many of them had negative attitudes towards condom use. For example, 66% reported it reduces the sensation of romantic sex, and 51% said condoms were not safe and that their partners hated condoms (47). Moreover, several risk factors for unprotected intercourse have been identified which reported that sexual debut was delayed, and the number of sexual partners decreased (51). In one of the two intervention projects that targeted condom use the study from Uganda reported condom use behaviors improved (37). The results of the review suggest that knowledge and attitudes are easiest to change, but behaviors are much more challenging. Self-efficacy however can be increased through observing role models or participating in social skills training including how to use condoms (49).

These include: believing that condoms are not safe (for males), believing that condoms diminish pleasure (for males and females) and equating condoms with lack of trust. Low condom use in some communities has been attributed, in part due to diverse cultural constraints on people’s perception of condoms. Financial need, indicated by receipt of welfare, appeared to be a significant barrier to increasing condom use(49;52;53). In addition numerous studies indicated the male partners’ cooperation to be a strong determinant of condom use (51-53). It is our opinion that a component addressing sexual communication practices is important to affect condom use among partners. There are numerous beliefs associated with condom use in Tanzania, despite increased awareness resulting from Tanzania government HIV and AIDS campaigns, condom use among adolescents remain relatively low.

However, it is evident from some studies that when well designed programs are intervened can improve condom use among youth. Findings from a study in Uganda reported an increase in the use of condoms among students (37). One program which from South Africa among others that focused on condom promotion resulted in increasing in condom use (39).

1.3.9 Effects of gender on HIV and condom use

Generally, women are much easier infected than men; many studies throughout Africa including Tanzania suggest women and girls are more infected with HIV than men (19). Some reasons could explain this difference: in part, biological make up of female genitals facilitate the easy transmission of the virus. Furthermore, Female Genital Mutilation (FGM) which is still in practice in many African communities is another source of spread of HIV infection due to use of un-sterile instruments in the process of genital mutilation. One study from Tanzania indicated 45.2% of participants with mean age of 9.6 years reported to be circumcised (26). FGM was found to be common among the Somali in Eastern Ethiopia (54). Social construction of masculinity often defines a male as promiscuous, aggressive and in control of his environment including their female partner's sexuality. While women are seen as subordinate, passive to men and expected by society to have as few sexual partners as possible in order to become a good wife. Because of these two distinct patterns of socialization women encounter difficulties in negotiating use of condom (55). This suggests a strong need that for women, interventions should focus on sexual empowerment. These negative images make majority of women not able to discuss about condom, in so doing we don't expect high awareness of condom among females. Finally, girls often have older partners who could have had many sexual partners (19). A recent study from Tanzania reported most significant correlates of consistent condom use among males include perceived self efficacy for correct condom use, discussing condom use with friends and perceived self efficacy for using condom with long term partner. Discussing condom use with a sexual partner and the perceived self-efficacy to refuse sex if the sex partner refused to use a condom were the most significant predictors for women (56). One implication of the these findings is that, effective interventions should emphasize correct condom use know-how and address the issue of negative peer pressure and group norms around condom use.

1.3.10 Accessibility to condoms

Accessibility to condoms is a key to their use, as information on safe sex alone is not sufficient. Among the factors associated with condom use as identified by one study was accessibility to condoms (57). For example, in Tanzania data show that free condoms are available in public health facilities, particularly those located in urban places (12). However, due to stigma surrounding the idea of using a condom in both rural and urban areas; most people are unable to take advantage of getting free condoms which results in low condom use rates. However, even though condoms may be provided free of charge at health facilities, a number of issues might especially hinder adolescents from accessing them:

i) Health facilities are not youth friendly; the Service providers' attitudes on condom provision to adolescents is an obstacle as sometimes, the service providers tend to impose their personal interests as parents or their perceived roles into the health care setting. Thus they might stress abstinence or focus on contraception. This shows a study in Durban: despite the service providers' awareness of AIDS they perceived their role to be that of promoting contraception. Because condoms were perceived as a poor choice regarding contraception the service providers discouraged their use and promoted abstinence (58).

ii) Privacy in locations where youth can access condoms is another major concern that can affects accessibility. This is due to stigma on condom use. In Uganda, it was found that some participants reported they would use a condom if they had one, but shyness about condoms was identified (37). In that study girls were less likely than boys to say they will use condom if one was available. This suggests a need to plan for intervention to increase the intention to use condom among girls, which is a determinant of using condom.

Despite the fact that condoms are discussed in Tanzania primary school but they are not distributed in schools, for the reasons that such decision connotes encouragement of sexual practices in schools(59). Although some studies from western countries have proved wrong (60-62).

From this body of knowledge, there is encouraging signs that prevention efforts in school programs will improve protective sexual behaviour among sexually active and non active ones.

1.3.11 Background of Kahe Community Health Development Project

One of the goals of the NUFU-funded project "Health Systems Research and Health Promotion in Relation to Reproductive Health in Tanzania" has been to design and evaluate health promoting intervention programs. The project aimed at developing and implementing HIV and AIDS risk-reduction strategies.

Guiding the planned intervention work in Kahe is a theoretical framework drawing upon the community-based health promotion planning model. According to this framework, the community intervention process can be divided into five main phases:

I Community analysis: Key elements include defining the community, data collection, assessing community capacity, barriers and readiness for change and setting priorities.

II Design-initiation: Key elements include establishing a planning group, choosing an organizational structure, define the organization's mission and goals, clarify roles and responsibilities, and provide training and recognition.

III Implementation: Key elements include determining priority intervention activities, develop a specific work plan, generate broad community involvement, and carry out the intervention.

IV Maintenance-consolidation: Key elements include integration of intervention activities into existing community structures.

V Dissemination-reassessment: Key elements include updating the community analysis, assess the effectiveness of the intervention and summarize results.

The main objective of the Kahe Community Health Development Project (KCHDP) is to promote the sexual and reproductive health of school children and out-of-school adolescents between the age of 10 to 19 years in Kahe Wards through a comprehensive community-based intervention program. The project known in Kiswahili as "AFYA KWA VIJANA" literally translates to "Health for youth". The planned and implemented interventions for the school adolescents in this Project consist of two main pillars, each including several more specific interventions:

School-based Reproductive Health Education: a curriculum based on existing and evaluated sexual and reproductive health curricula was prepared by the project staff and implemented by trained teachers for three months from March to June 2003.

Condom Promotion: utilizing a social marketing strategy already tested in other parts of Tanzania.

Interventions

Intervention activities were conducted in 2003. Among the intervention activities: social marketing of condoms where penile models were given to each school to demonstrate the use of condoms. Teachers and peer educators led discussions on condom use as one of the risk reduction strategies of HIV infection. Moreover, drama, leaflets and brochures with information on the correct use of condoms were given to pupils.

In-school youth and an out of school youth programs ran concurrently. Hence, there could be spill over effects on information about preventive sexual behaviors between these two programs through family interactions. Also, the effects of media and friends on e.g. condom awareness can not be overlooked.

Social marketing of condoms: The KCHDP organized social marketing of condoms with Population Service International (PSI), a project that advocates the use of condoms countrywide. This activity which was meant mainly to target out of school youth was conducted during weekends, and thus both groups in and out of school youths might have benefited from it. Drama on the importance of using condoms and demonstration of the correct use of condoms using penile models were presented.

Curriculum: The project staff prepared a curriculum written in Swahili, the official language used in primary schools for teaching school children about puberty associated physical and behavioral changes, body anatomy, knowledge on HIV and AIDS and STIs. Other topics were on safer sex including condom knowledge and their use together with communication on behavior change. Two teachers and two peer educators from each 6^{th} and 7^{th} grades were trained in each participating school. These key actors were responsible for conveying the contents of the curriculum using different innovative teaching methods including interactive role plays and drama.

Classroom activities: Pupils in small groups led by peer educators discussed how people get HIV infection and different preventive measures (ABC campaign). Teachers gave information regarding HIV transmission and AIDS. Teachers and peer educators demonstrated the use of condoms by using penile models provided by the project.

Media campaigns: T-shirts labeled AFYA KWA VIJANA (Health for Youth) were given to peer educators and teachers to increase the visibility of the program in the community. Village advisory committees were formed where two parents from each village participated as representative of other parents in their respective villages to present issue pertaining both in and out of school adolescents. Monitoring and supervision of the intervention was done by the project staff throughout the intervention period.

The investigator (Hafsa Omari Khalfani) of this study had been working as *evaluation officer* of KCHDP from 2002 to 2005. Apart from supervision and monitoring, she was also responsible for data collection and data management. Thus, part of the data (2002-2005) used in this study were collected by the investigator while serving as project staff.

1.4 Objectives of the study

The **primary objective** of this study was to determine trends in condom awareness, accessibility and use among school children in Kahe wards through the years 2001 to 2006.

The **Specific Objectives** of the study were**:-**

1. To assess awareness, accessibility and condom use among school children over time (2001-2006).
2. To investigate how awareness, accessibility, self efficacy (regarding condom use) and reported condom use itself among school children varies by sex and age (2006).
3. To compare the pupils' condom awareness, accessibility and the use of condoms reported in 2001 and in 2006.

2. METHODOLOGY

2.1 Study design

The study was designed as school-based, repeated cross-sectional surveys. This design was chosen since it allows keeping the age constant and thus making it possible to investigate trends within a given age group.

In research there are basically two methodologies for data collection and analysis namely: i) quantitative and ii) qualitative methods. Although both have merits and demerits, here only those related to quantitative methodology are discussed since these are the ones used in this study.

The focus of quantitative studies is on comparing groups discriminating different variables. The method allows generalizations of the results across the whole population. Data collection in quantitative research is typically/often done using pre-structured written or online questions that have to be filled in by the respondents. The analysis of the answers is based on numerical statistical methodologies.

2.2 Setting of the Study area

The survey was conducted in Kahe wards, Moshi rural, Kilimanjaro region, Tanzania. Moshi rural is one of six districts in the region. Other districts are Moshi urban, Hai, Same, Rombo and Mwanga. Kahe is 30 kilometers south of Moshi town and only a few kilometers away from the Kenyan-Tanzanian border.

2.3 Selection of the study area

This area was chosen as the study area due to the fact that it is located close to the Kenyan-Tanzanian border. There is an increasing risk of HIV and AIDS infection due to the continuous movement of people across the border for business purposes. It is also regarded to be a relatively low socioeconomic status area.

2.4 Study population

The target population for this study was school children in standard six and seven within Kahe wards. The arguments for choosing school children in primary school have been discussed in depth in chapter one. All surveyed schools are day schools with mixed pupils i.e. boys and girls. Pupils from these schools represent an average the lower socioeconomic strata of the Tanzanian school children regarding parental income and parental education.

2.5 Procedures

2.5.1 Sample and sampling method

All the 12 primary schools in Kahe wards were visited; these are all schools in Kahe wards. A total of **4,008** participants were surveyed over the period of 2001 to2006, the sample size in each year was as follows:

Table1: Sample size per year of survey, 2001 to 2006

Year	2001	2002	2003	2004	2005	2006
Sample size (n)	524	548	554	611	804	967

A non-probability convenience sampling method was used for all surveys from 2001 to 2006. The method was further preferred as it was convenient (quick, inexpensive, less costly and less time consuming) and appropriate method for addressing the above research objectives.

2.5.2 Eligibility criteria of the sample

All registered pupils in Kahe schools attending Standard six or seven. Among these there were two **exclusion criteria**: (i) those that were not able to read or write Kiswahili and (ii) those not present on the day of the survey. There was no second attempt to get pupils to fill questionnaire who had not been on the day of survey. This was because *firstly*, missing pupils could have heard about the questionnaire and hence their responses might not reflect their true behaviors. *Secondly*, it was not feasible due to the timetable, limited resources and personnel. However the participation rate was large enough not to be affected in any way by the small proportion of missing pupils.

2.6 Instrument development

The objectives of the study were the key to the development of the instrument. Considerations were made on the existing knowledge and awareness on condom use among school children that were found in the same study area before and other places inside Tanzania.

2.6.1 Data collection instrument

Self-administered questionnaire: - The questionnaires (Annex 1) were completed by the students themselves independently after they received instructions from the researcher. Self-administered questionnaires were used in school classes for several reasons: firstly, they permit anonymity which may result in more honest responses taking into consideration that condom issues are private matters. People all over the world feel very embarrassed when asked about their sexual activities as a result they decide deliberately to give inaccurate responses. Secondly, self-administered questionnaires can be managed by one person for a large group, and thirdly, for the reasons explained above and because little personnel is needed are relatively in-expensive to use in group situation taking into account a good response rate.

Also a self-administered questionnaire eliminates bias due to phrasing questions differently with different interviewers which might be the case of their oral interviews**.** Furthermore, the questionnaire contains some more questions that were not used in this study. Those were for KCHDP purposes and thus not analyzed here. The instrument contained both open-ended and closed-ended questions with the following variables (see questionnaire in Annex 1).

2.6.2 Variables

As described in the objectives variables fall into the following categories:

Independent variables

Participants provided demographic information including sex, item no 1; age item no 2, and grade, item no 3.

Dependent variables

Condom awareness was assessed by asking

- If they know what a condom is, item no **113.**

Condom use was assessed by asking

- If they have ever used a condom, item no **114.**

Self efficacy in using condom was assessed by asking:

- How easy it is or it will be for them using condom when having sexual intercourse, item no **129**.

Accessibility to condom was assessed by asking:

- Where condom should be accessible, item no **127**.
- Reasons for adolescents for not getting condom when they want to use; item no **128**.
- How easy or hard is it for them getting hold of condoms when they need one, item no **130**.

2.6.3 Data collection process

First of all, the questionnaires were developed in English and translated into Swahili which is Tanzania's national language and the main medium of instruction in primary schools. This was done as accurate as possible with the help of two language specialists. The questionnaire was then translated back to English again to ensure that translation did not change the core meaning of the respective questions. Then respondents were all gathered in their classrooms. The pupils were instructed by the researcher, *first* the researcher asked if they wanted to participate in the study and the students accepted by giving verbal consent. Then the researcher stressed that participation was voluntarily and that there was no way of tracing their answers back to them, i.e. the answers were given anonymously. After that the questionnaires were filled by participants independently and anonymously. The researcher stayed in the classroom to ensure that no copying of responses or other indecencies occurred. Before the pupils handed back the questionnaires, the researcher checked if the questionnaires had been answered completely. This may be questionable and sounds unethical but the idea behind was, since the questionnaire was long it was possible for participants to skip some pages unintentionally. No teacher was allowed to see the questionnaires at any point.

It took the pupils a one hour period on average to fill in the questionnaire with slight variations among different classes.

2.6.4 Data management

Coding of questionnaires was done and data were checked for errors before been entered into a computer. With the help of a data clerk within the project they entered the data into the computer. Statistical Package for Social Sciences (SPSS, IL Inc. USA) version 14 and Epi Info 6 [World Health Organization (WHO)/Center for diseases control (CDC)] were used for analyses. Frequencies of various variables were run for descriptive purposes. The Pearson Chi square test or Fishers exact test was applied on categorical data for differences in proportions as appropriate. The Chi square test for trend in proportion was used to elicit trends in various variables from 2001 through 2006. To control for potential confounders (gender and age group) logistic regression analysis was employed. Adjusted Odds Ratios and p-values are presented. All p-values reported are two-sided. P-values were considered significant when $p \leq 0.05$.

2.7 Ethical consideration

Ethical clearance: - This study received ethical clearance from the Ministry of Health, Tanzania (see annex iii and iv). Permission from the education authorities at district, ward level and from each head of school were obtained. In Norway the ethical committee for medical research ethics at the University of Oslo granted ethical clearance for the conduct of the study with some comments (see annex ii). It was suggested that some questions on various sexual behaviours like oral sex, anal sex; sexual activity with same sex needs modification as they were appeared to be too detailed. However, since this study was part of the big study KCHDP, the said questions were for the project purposes and not part of the questions for this thesis; hence researcher had no mandate to modify them.

Confidentiality of the present study was assured while collecting and keeping the data, no identifying information was included on the questionnaire no names or id-numbers linking students to their questionnaires were used. No teachers present only project staff.

Voluntary: Pupils could omit items or pull out when they wanted.

Staff available: Could ask questions when they did not understand the item.

Informed consent: Verbal informed consent was obtained before the study began. As the age of these students is below 18 years the parents of the students have been involved in the program "AFYA KWA VIJANA". Moreover, parents had been informed before the study about the surveys through community meetings and had given their consent to their children participating in the study. Respondents were free to participate in the study or to leave the room if they did not want to respond to a questionnaire.

2.8 Data quality assurance methods

i) Reliability: - Reliability of a test is its ability to give consistent results over many tests. A test retest study was conducted in 2001.The results demonstrated that the instrument had satisfactory reliability.

ii) Validity: Survey **validity** represents the extent to which the questionnaire or other instruments used to collect data is able to approximate truth about peoples' behaviour or knowledge. Validating sexual behaviour data i.e. assessing the degree to which reported behaviour reflects actual behaviour, which is not easy (63). The most difficult part is that direct observation or public records are impossible in the context of private sexual behaviour. So, investigation on sexual matters departs from the point that intended behaviour is equaled done behaviour. Starting from this point there still has to be made sure that a questionnaire measures what is intended to measure. The following aspects contribute to validity of the study: i) the use of the among all ethnical groups broadly spoken and in day to day activity generally used national language Swahili ensured the items in the questionnaire had been well understood by all pupils. ii) Moreover, the questionnaire was structured in such a way that sensitive questions were placed near the end of the questionnaire. This makes people answer these questions when already got used to the questionnaire and start to feel comfortable in the whole context.

3. RESULTS- DATA PRESENTATION

3.1 Sample characteristics

The characteristics of the participants are summarized in Table 2. A total of **4,020** registered pupils from standard six and seven from all 12 schools in Kahe wards were addressed for survey from 2001-2006. Out of the 4,172 expected, i.e. the response rate was **96 %**. From the addressed 4,020 pupils present on the respective day of survey less than 1 % refused to participate in the surveys from 2001-2006 leaving **4,008** pupils who actually participated. For the reasons explained above in "methodology" those absent on the respective day of study were not re-contacted. All pupils reached were able to read, comprehend and write. Although it had been intended to receive answers on all questions asked, different variables may have a varying number of sample sizes (n) due to missing values. The total number of missing values is not large and sample size was adequate. However, missing data are not shown in the tables.

Of the 4,008 pupils that were surveyed between year 2001-2006, 47.3 % were males (n=1,897) and 52.2% were females (n = 2,091). A total of 20 pupils (0.5 %) did not indicate their **sex**. Over the years, 2001-2006 with the exception of 2004 and 2005, females outnumbered males.

The age span of the participants ranged from 10 to 20 years. Mean ages across the years of surveys were more or less the same: in 2001 and 2002 it was 14.90 years, whereas in the last years it was slightly lower with 14.61 in 2003, 14.49 in 2004 and 2005 and 14.51 in 2006. Age, which was initially collected as continuous data, was later categorized into three groups: i) from 10 to 13, ii) from 14 to 16 and iii) from 17 to 20 years. Majority of the pupils were belonging to the 14-16 years age group. The proportion of participants who have had their sexual debut increased from 9.2% in 2001 to 16.5% in 2003. Then decline to 14.9% in 2004, it was found to be stable in 2005 and 2006 which was 17.5%.

Table 2: Characteristics of participants in Kahe wards, Tanzania (n= 4008) 2001-2006

Variable	% Pupils* in survey years					
	2001	**2002**	**2003**	**2004**	**2005**	**2006**
Sex						
Male	(221) 42.7	(242) 44.4	(272) 49.4	(309) 50.6	(405) 50.4	(448) 46.7
Female	(297) 57.3	(303) 55.6	(279) 50.6	(302) 49.4	(398) 49.6	(512) 53.3
Age in years						
10-13	(69) 13.2	(70) 12.9	(103) 18.7	(115) 19.0	(170) 21.4	(208) 21.8
14-16	(395) 75.5	(431) 78.5	(417) 75.7	(454) 75.2	(578)72.6	(695) 72.7
17-20	(59) 11.3	(46) 8.6	(31) 5.6	(35) 5.8	(48) 6.0	(53) 5.5
School level						
Standard 6	(284) 56.7	(249) 45.7	(270) 49.4	(303) 50.7	(446) 56.0	(477) 49.3
Standard 7	(217)43.3	(296) 54.3	(277) 50.6	(295) 49.3	(350) 44.0	(490) 50.7
Sexual debut						
Yes	(44) 9.2	(82) 15.1	(90) 16.5	(90) 14.9	(140) 17.5	(169) 17.5
No	(436) 90.8	(460) 84.9	(457) 83.5	(515) 85.1	(662) 82.5	(797) 82.5

*All percentages are reported based on the number of students responding to a particular question

3.2 Trends in condom awareness, accessibility and use, 2001 to 2006

Table 3: presents the analysis for linear trend of proportions. Extended Mantel Haenszel chi square is reported which reflects the departure of the linear trend from horizontal, which would be “no trend”. Significant level was considered at $p<0.005$ which reflects a trend in the population.

A significant trend over the relevant timeframe 2001 to 2006 was found in the proportions of pupils who knew what condoms are. Overall, condom awareness was found to be below 50 % from 2001 through 2006. However, the pattern demonstrated a remarkable increase in condom awareness from 18.1 % at baseline (2001) to 42.4 % in 2004, i.e. more than a doubling of the percentages. This as a remarkable trend in two aspects: the general doubling of percentages as well as the supposed underlying freeness to confess knowledge about the item. In our analysis 2001 was a reference year, since it was a year a baseline survey was conducted. Furthermore, our findings indicate significantly participants in 2004 were more likely to know what condoms are than in previous years. However, participants in year 2006 were less likely to know what condom is than in 2005, 34.2% for 2005 and 33.6% for 2006 but still more likely than at the baseline. Odds ratios are presented in Table 3. What seems a significant change over time by the mere increase in percentages is supported by the analysis of P-value for chi square for trend: it was <0.001. This reflects a significant trend exists in the population.

Reported “ever use of condoms” by pupils who have had their sexual debut increased from 20.5% in 2001 to 27.6% in 2006; there was no significant increase, (p value for chi square for trend 0.747).

Condom accessibility was investigated by asking the pupils "How easy or hard is it for you to get hold of a condom when you need one?". The options for answers which originally were three: 1 for *easy*, 2 for *hard* and 3 for *not sure* were dichotomized to 1 for e*asy* and 2 for *hard*, all those who responded "*not sure*" were summarized under "*hard"* category. This was done to ensure there are enough participants in each cell to allow good analysis and meaningful interpretation of the findings. The findings revealed no significant difference in condom accessibility over the years. The p value for chi square for trend was 0.219.

Table 3: Trends in condom awareness, reported condom use and accessibility 2001-2006 surveys

Variable	2001	2002	2003	2004	2005	2006	P value for trend
% who knew condom (n=3896)	18.12	21.71	42.12	42.43	34.2	33.64	**<0.001**
OR	1.00	1.25	3.29	3.32	3.34	2.28	
*% ever used condom (n=615)	20.5	23.2	28.9	24.4	19.3	27.6	0.747
OR	1.00	1.27	1.63	1.31	0.97	1.53	
% access to condom (n=4008)	9.5	17.3	30.0	22.2	26.2	14.6	0.219
OR	1.00	1.99	4.06	2.77	3.36	1.62	

All percentages are reported based on the number of students responding to a particular question, OR= Odd Ratio

*Calculated out of sexually active pupils

Fig 2: Condom awareness among pupils in Kahe, 2001 to 2006

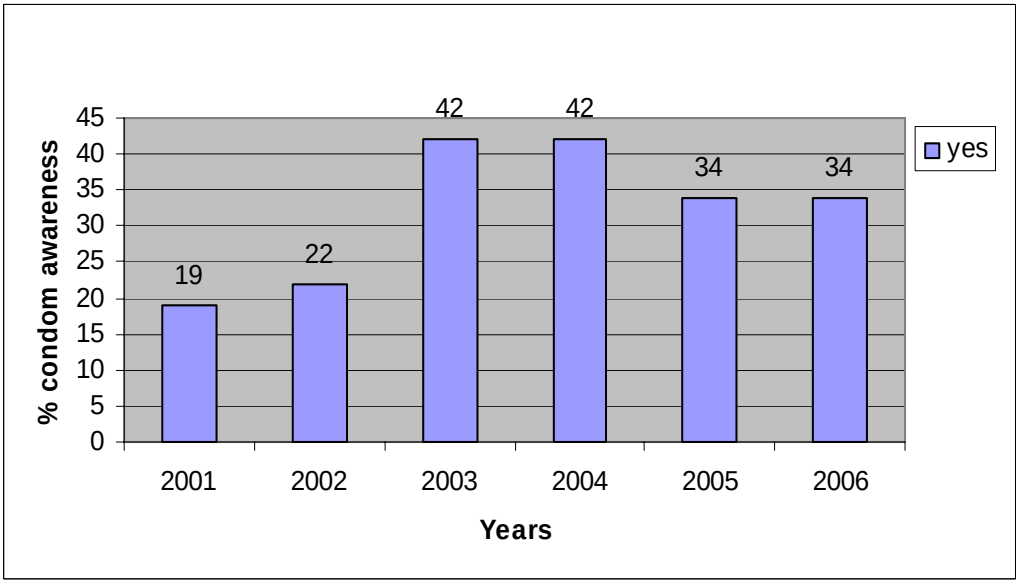
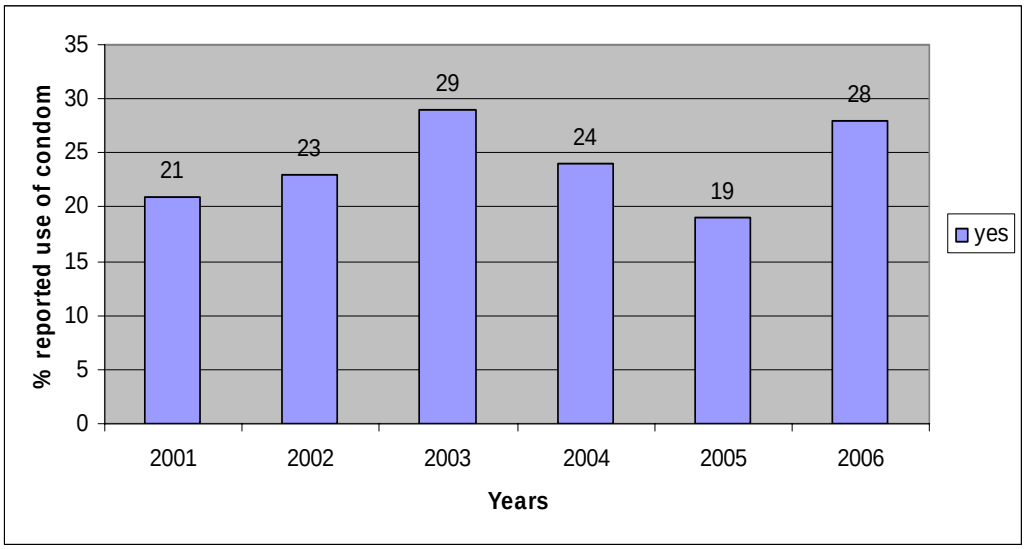


Fig 3: Condom use among pupils in Kahe, 2001-2006



3.3 Condom awareness, accessibility and use according to sex and age

Table 4 shows condom awareness by age and sex, a 2x2 cross tabulation was computed. Again, age was categorized into three groups: 10-13, 14-16 and 17-20 years. The results show an increase in condom awareness as age increased for both sexes. However, this increase was only significant among female participants where p-value was 0.003 for females and for males 0.552.

For both sexes the largest age group, 14-16 years had the highest proportion of participants who stated they have “ever used condoms” compared to the other age groups. Among that group 13.6% for males and 4.1% for females reported to “ever used condoms”. Moreover, among the females in the *oldest group* which was 17 to 20 years nobody reported to had “ever have used a condom”. Statistical significance was not achieved for either sex with p value being 0.434 for the boys and 0.579 for the girls. Accessibility of condom was assessed by four aspects: (i) perceived accessibility of condoms, (ii) preferred location of access to condoms, (iii) reasons to why pupils cannot access condoms.

In order to investigate the participants’ **perceptions of condom accessibility** the question posed was: “How easy will it be for pupils to get hold of condom when they need one?” Analyzing the age groups and special locations there were differences in preferred places among both sexes, even if statistical testing did not test significance. Among boys the *youngest group* which was 10 to 13 years had the largest proportion of those who perceived accessibility to condom was easy as opposed that in 14-16 and 17-20 years age groups. As opposed to the boys, the largest proportion of girls who perceived it easy to access condoms was found in group between 17 and 20 years compared to those in 10-13 and 14-16 years age groups. However, there was no statistical significance in either sexes with p value of 0.256 for males and 0.306 for females.

For the second aspect of condom accessibility, different locations that condoms can be available for easy access were investigated. Regarding the locations where pupils preferred condoms to be available for easy accessibility, local health facility was chosen often by all age groups in both sexes.

In detail: in the **youngest group** 10-13 years, 42.9 % among males in that group and 58.2 % of females in the same group called for local health facility. Local health facility was mentioned by 41.1 % of males and 25.3 % of females followed by school which was chosen by 7.1% of males and 5.5% of females. Among participants of the second age group local health facility was mentioned by a substantial proportion of participants, i.e. 45.5% of males and 58.9% of females. This age group then preferred local retail shop as location to easily access condoms with 34.9% of males and 30.5% of females. School followed on third place among this age group with a relatively small proportion among both males and females. Among the **oldest age group**, between 17 and 20 years, also health facility was chosen by a substantial proportion of participants. Local retail shop followed as second place of choice by 32.2 % of males as compared to 35.7 % of females. While

8.1% of males mentioned peer educators as a good place to get condoms from none among the older girls did so. However, for both sexes no significant difference was achieved.

With regard to the third aspect “reasons why pupils can not access condoms when they wanted one”, the findings show that more than half of the youngest group of 10 to 13 years from both sexes did not know the reasons why (54.4 % of males and 71.6 % of females). A quarter of the males and of the females in this age group mentioned “feeling embarrassed” to be a reason for not accessing condoms. The third important reason was “condoms are expensive” with 10.5 % among males but much more among females with a quarter.

Among 14-16 years age group where most of the participants fall in, the results show a similar pattern for the first answer. As before the largest proportion of the 14 to 16 years among both sexes said they did not know the reasons why condoms are not easily to access 47.4 % for males and 68.9 % for females. Among this age group the second important reason for not accessing condoms easily is “feeling embarrassed”. Expensiveness of condoms is the third important reason coherently among this age group. But compared to 13.2% of males only 4.6% of females state that a condom being expensive was the reason for not accessing them. Among this age group “do not know where to get condoms” appears as a new significant argument, summarized under “other reasons” refer Table 5.

Among the oldest group, the 17 to 20 years old, an interesting shift in the main reasons why pupils can not access condoms when they wanted one occurs. While now over two thirds (64.3%) of females state they do not know the reason for not accessing condoms, only a quarter of males (25.6%) say so. The reason “feeling embarrassed” remains second important reason for not accessing condoms for males and females. But the third important reason gets remarkably higher importance as 23.1% of males of this age group mention “condom being expensive” as a reason for difficult access. In strong contrast to this none of the older girls (17-20 years) mentioned that reason as inhibiting condom use. However, no significant difference was demonstrated in those reasons for both groups ($p=0.114$ for males and $p=0.640$ for females).

The fourth variable of interest was **self-efficacy** in using condom. The question was to find out “how easy is it or will it be using a condom when having sexual intercourse?” Generally nearly a half of the males and more a half of the females participants from all age groups, 47.4% v/s 59.5% from 10-13 years age group, 46.4% v/s 62.1% from 14-16 years and 48.1% v/s 64.3% from 17-20 years (for males and females respectively) from all age groups reported it was difficult to use

condom when having sexual intercourse. Among participants in the 10-13 years age group 22.8 % of females reported it was easy as compared to 9.5% of males in the same age group. 22.5% of males in the 14-16 years age group and 8.2 % of females reported it was easy using condom and among participants in 17-20 years, 28.2% of males and 7.1% of females reported it was or it will be easy using condom when having sexual intercourse. The percentages of pupils thinking it was or will be easy using a condom remained more or less the same through all three age groups. However, the significant difference in proportion of those who chose various reasons was not demonstrated ($p=0.865$ for males and 0.977 for females).

Table 4: Proportions of participants on sexual debut, condom awareness, accessibility and use in Kahe by age and sex, 2006

Variable		10-13 yrs %	14-16 yrs %	17-20 yrs %	P value
Knew what condom was	Male (n=921)				
	Yes	43.6	48.0	55.3	0.552
	Female (n=495)				
	Yes	11.7	24.4	35.7	**0.003**
Reported condom use (n=925)	Male (n=427)				
	Yes	7.0	13.6	13.2	0.434
	Female (n=498)				
	Yes	2.8	4.1	0.0	0.579
Easy access to condom (n=930)	Male (n=427)				
	Easy	28.1	22.4	20.5	0.256
	Not sure	22.8	26.6	12.8	
	Hard	49.1	51.1	66.7	
	Female (n=503)				
	Easy	6.2	7.2	21.4	0.306*
	Not sure	31.5	30.2	35.7	
	Hard	62.3	61.8	42.9	
Proposed locations for condom (n=940)	Male (n=439)				
	At my school	7.1	11.1	13.5	0.943*
	In local retail shop	41.1	34.9	32.4	
	Local health care facility	42.9	45.5	45.9	
	Somewhere**	8.9	8.5	8.1	
	Female (n=501)				
	At my school	5.5	4.4	7.1	0.405*
	In local retail shop	25.3	30.5	35.7	
	Local health care facility	58.2	58.9	57.1	
	Somewhere**	11.0	6.2	0.0	
Reasons not accessing condoms(n=947)	Male (n=438)				
	Condoms are very expensive	10.5	13.2	23.1	0.114
	Embarrassed to buy condoms	26.3	22.8	25.6	
	Condoms are not available	3.5	11.4	17.9	
	Don't know	54.4	47.4	25.6	
	Other reasons*	5.3	5.3	7.7	
	Female (n=509)				
	Condoms are very expensive	4.1	4.6	0.0	0.640*
	Embarrassed to buy condoms	18.9	17.6	21.4	
	Condoms are not available	4.7	5.8	14.3	
	Don't know	71.6	68.9	64.3	
	Other reasons*	0.7	3.2	0.0	
Self efficacy in condom use (n=939)	Male (n=434)				
	Easy	22.8	22.5	28.2	0.865
	Not sure	29.8	31.1	23.1	
	Hard	47.4	46.4	48.1	
	Female (n=505)				
	Easy	9.5	8.2	7.1	0.977*
	Not sure	31.1	29.7	28.6	
	Hard	59.5	62.1	64.3	

Different total number is owing to missing values in variables; *other reasons were not aware of where to get condoms;
** somewhere from peer educators, Yrs=years

3.4 Comparisons of 2001 and 2006 on condom awareness, accessibility and use

Table 5**:** Comparison of the baseline data (2001) and the 2006 survey were done with the assumption that teachers were continuing delivering contents of the curriculum to the pupils despite the fact that the intervention period ceased. Cross tabulation was done; proportions and p-values (two tailed) from chi square test are indicated in the Table below.

Significantly, condom awareness was high in 2006 almost twice as much as baseline ($p<0.001$). Proportion of those sexually active who reported to have used condoms increased from 20.5% in 2001 to 27.6% in 2006 (n.s.). Furthermore, when investigating self-efficacy in using condoms on how easy or hard it is or it will be to use condom when having sexual intercourse results were opposite, significantly fewer pupils in 2006 than in 2001 found it easy to use condom. More pupils in 2006 survey, significantly reported to access condom very easily than those in 2001, $p<0.001$.

Table 5: Comparison in condom awareness, accessibility self efficacy and use between 2001 and 2006 among school pupils in Kahe

Variables		**2001 (%)**	**2006 (%)**	**P- value**
Condom awareness	Yes	(81) 18.1	(315) 33.6	**<0.001**
	No	(371) 81.9	(623) 66.4	
****Reported condom use*	Yes	(8) 20.5	(45) 27.6	**0.366**
	No	(31) 79.5	(118) 72.4	
Self efficacy	Easy	(208) 40.9	(146)15.3	**<0.001**
in using condom	not sure	(110) 21.6	(291)30.5	
	Hard	(191) 37.5	(518)54.2	
Condom accessibility	Very easy	(42) 9.5	(138)14.6	**<0.001**
	Easy	(28) 6.2	(266) 28.0	
	Difficult	(376) 84.3	(543) 57.4	

*Computed out of sexually active pupils for 2001, n=39 and 2006, n=163; the rest were computed out of the whole sample

3.4.1 Multivariate analysis

Table 6: We used logistic regression to examine factors associated with condom awareness and ever use of condom. The dependent variables were ever used a condom and do you know what a condom is. When potential confounders: age group and sex were adjusted in binary logistic regression our results indicated that they were all significant. Hence we had to compute multivariate regression. The logistic models were controlled for **age group** and **sex** that might influence condom awareness and use. The reference groups were; baseline year (2001), youngest age group (10-12 years) and male sex.

We present proportions who knew condoms out of the whole male and female samples. Regarding age group proportions they are presented out of the whole sample in that specific age group.

When sex was controlled results showed significantly females were less aware of condom than males, (OR 0.32, 95%, CI 0.24-0.41, p<0.001).

Regarding to age group, pupils in the 14-16 years age group were more likely to be aware of condom than those in 10-13 years and those in 17-20 years times more likely to be aware of condoms than those in 10-13 years. (OR=1.57, 95% CI 1.10-2.23, p=0.013; OR=2.29, 95% CI 1.32-3.95, p=0.003).

Furthermore, when we investigated if there was confounding effect of sex on the effect of condom use, our results showed sex had a significant effect on condom awareness. These results revealed females were less likely to use condoms than were males, (OR=0.27, 95% CI 0.16-0.45, p<0.001).

Significantly, respondents in 2006 were 3.3 times more likely to ever use condoms than in 2001. OR=3.34, 95% CI 1.74-6.40, p<0.001). Furthermore, we found significantly females used condom less than their males counterparts (OR=0.27, 95% CI 0.16-0.45 p<0.001). Pupils in 14-16 years age group report to ever use a condom more likely than those in 10-13 years(OR 1.74 95% CI 0.84-3.59, p=0.133; OR 1.43, 95% CI 0.48-4.25, p=0.522). Further, pupils in 17-20 were more likely to use condom more than those in 10-13 years, although this did not attain statistical significance at 5% level.

Table 6: Factors associated with condom awareness and use among school children in Kahe wards

Variable	N	%	Crude OR (95% CI)	Adjusted OR (95% CI)	P value
Condom awareness					
Sex					
Male	264	41.7	1	1	
Female	129	17.3	0.29(0.23-0.37)	0.32(0.24-0.41)	**<0.001**
Age groups (years)					
10-13	50	19.0	1	1	
14-16	302	29.8	1.78(1.27-2.49)	1.57(1.10-2.23)	**0.013**
17-20	39	39.0	2.69(1.62-4.46)	2.29(1.32-3.95)	**0.003**
Reported condom use					
Sex					
Male	62	9.8	1	1	
Female	22	2.9	0.26(0.16-0.45)	0.27(0.16-0.45)	**<0.001**
Age groups (years)					
10-13	9	3.4	1	1	
14-16	69	6.8	2.30(1.00-4.13)	1.74(0.84-3.59)	0.133
17-20	6	6.2	1.85(0.64-5.35)	1.43(0.48-4.25)	0.522

OR Odds ratio, 95% CI=Confidence interval Adjusted for age group, sex

4. DISCUSSION

4.1 Main discussion

This study has described the trends of condom awareness, accessibility and use among school pupils from 2001 to 2006 in Kahe wards. The trends were comparable over time due to the following key issues: *firstly*, the time periods in which the change was observed was the same July to August every year (2001-2006). *Secondly*, the mode of data collection was the same over years which were self administered questionnaires. *Thirdly*, the sample population was the same, sixth and seventh graders every year but it should be noted here that these pupils are not the same in every year. Every year we maintained one class only for the next year (i.e. surveyed 6^{th} graders was 7^{th} graders the subsequent year). Because their identities were not recorded, it was impossible to link them. This was because of ethical reasons and practical. In this study we therefore treated the data as if we had different pupils every year.

4.1.1 Participants

Between 2001 and 2006, we recruited a convenience sample of 4008 pupils. Pupils in 2001 and 2002 were significantly older than their fellows in other years. The age ranged from 10 to 20 years.

4.1.2 Trends in condom awareness

Our data indicated relative low condom awareness among pupils. However, a trend demonstrated a significant increase of condom awareness from 2001 to 2004, which then declines between 2005 and 2006. The proportion of those who knew what condoms are in our study from 2002 to 2006 were relative higher than those found in one study in Tanzania where only 22% mentioned condom as means of HIV infection (6). But on other hand our results are slightly lower than those reported in a study conducted in PERFAR countries (The President Emergency Plan for AIDS Relief) whereby 50% of participants knew what condoms are (67). Decline in proportion of those reported to know what condoms are in our study between 2005 and 2006, may be explained partly, by possibility of teachers not addressing condom issues intensively after the core interventions were over. A question of main study was whether or not teachers would continue delivering the contents of the curriculum from 2005 onwards, i.e. after the intervention ended. This is because the fourth

stage of the framework of KCHDP which is **maintenance-consolidation** (explicitly meaning integration of intervention activities into existing community structures) stated under background of Kahe community health development project wanted teachers to continue teaching the contents of the curriculum. Lack of motivation on the program, which could be contributed by absence of project staff that were among the key people in the program, might have an impact to what looks like failure of the program sustainability.

Moreover, peer educators formed in 2003 whose responsibility was to influence condom awareness among other pupils all completed their education by 2004 and left the school. These findings suggest more efforts should focus on increasing of condom awareness among pupils. The proportion that is aware of condom is relative low take into account it is 24 years now since the starts of HIV epidemic in Tanzania. Whilst the HIV and AIDS awareness is said to be high in the country, yet the awareness on the important means of prevention against HIV infection (condom use) remains low in rural areas such as Kahe.

The 2006 data indicated that the significant difference of condom awareness across age groups was only attained among female participants; the pattern demonstrated that condom awareness among women increased with their age. The possible explanation could be since females are likely to be sexually experienced as age increases. Because being sexual active is an age related behaviour, as age increases females may tend to increasingly seeking information on sexuality matters including use of condoms for HIV and unwanted pregnancies prevention from different sources. Female pupils show much concern on fear of pregnancies because they will be expelled from schools rather than HIV infection which is slow killing diseases. Rate of pregnancies among female pupils is likely to increase with increasing age as one experience puberty while sexually active, the likelihood of becoming pregnancy increase without use of contraceptives including use of condom.

However, awareness was found higher among males than females which may have resulted from social-cultural construction as many communities make it unacceptable for females in general to discuss sexuality matters as opposed to males. It has been documented that females' ignorance of sexual matters especially at young ages is often viewed as a sign of purity and innocence while having too much knowledge about sex is a sign of easy virtue (68). This emphasis on innocence prevents young women from seeking information about sex or services relating to their sexual health as they are supposed to be ignorant and inexperienced. On the other hand significant difference on condom awareness among male participants across the age groups could not be demonstrated.

These findings suggest condom awareness across all age groups was the same. Because females have their sexual debut earlier than males as documented by some studies (69;70). Our findings indicate no significant difference on condom awareness among males across all age groups. Furthermore, due to peer pressure and influences of media on the awareness, the older pupils are likely to be more ware than younger ones. Since males' exposure to information is almost the same across all the age groups. Awareness to condoms is crucial stage in promoting protective sexual behaviour as stated earlier in this document knowledge and information are the first line of defense for young people. In improving condom awareness especially among girls there is a strong need to adjust intervention taking into consideration girls' age specific needs according to their respective ages. Many schools including Kahe schools, girls and boys have classes in the same room, there is a need to have different sessions gender wise in order to address and stress intensively girls and boys specific needs and interests. Sometimes girls might have questions that may feel embarrassed to ask in front of boys.

Since previous studies in Tanzania reported a substantial proportion of primary school pupils become sexually active at ages earlier than 17-20 years (9;71;72). There is a need to introduce education on HIV/AIDS and other STIs education in lower classes (e.g. from standard five) and ensure that younger pupils are made aware of the protective sexual behaviour including use of condoms before they have their sexual debut. This is especially important because it is not easy to change the behaviour once they are established (5;33;36). The proposed intervention will influence pupils in younger age grow while having sense of being responsible for their own sexual behaviors.

4.1.3 Trends in condom use

A review of the literature reveals that condom use is influenced by social and demographic characteristics, knowledge about reproductive health, self efficacy and attitude towards condom, issues of access and affordability (51). The mentioned factors altogether when integrated is likely to promote condom use among individuals. However, consistent and correct condom use play a great role in prevention of HIV infection and unwanted pregnancy (19). Use of condom even once is one step forward but for effective HIV prevention consistent and correct condom use is mostly encouraged. Moreover, the measures most documented in many studies as indicators of condom use are condom use during the first sexual intercourse, condom use at last sexual encounter, consistent condom use and lifetime condom use (17). While lifetime condom use provides important information, it is the determinant of consistent condom use that would be most important to address in intervention (28).

We found proportions of pupils (who have had their sexual debut) that reported to have had ever used a condom increased from 2001 to 2006 (n.s.). Despite this noted improvement in proportion that reported to have ever used a condom from 2001 to 2006, generally the proportion of sexually active females and males reporting to have ever used a condom was relative low. Suffice to say the magnitude of the increase in condom awareness is not adequate to create the public health effect needed.

For example although in our study the proportion of participants who knew what condom is increased, but very small percentage of sexually active participants reported to have ever used a condom. Moreover, the proportions of participants who have ever used condoms in our study are relative higher compared to the findings from a population-based survey in Arusha and Kilimanjaro, Tanzania indicated 17% of older adolescents (15 through 19 years old) had used condom at least once (73). Short period of interventions as well as inadequate supply and negative perception of condoms may explain this low proportion.

Three months intervention is a short time for a persistent change of behaviour although previous studies in Tanzania had similar length of intervention (36;38). However, this little increase in condom use in 2006 reflects changes among pupils in attitudes about condoms. The results from a recent published study in Tanzania agree with our argument that program needs time to impact necessary changes among targeted audience(74). In that study knowledge of HIV and condom use were found to improve after three years of intervention. Additionally, a study in South Africa had two weeks intervention and proved this to be very short time span to develop the desired extent of active participation of program recipients (75). Two weeks was relatively short time as compared to long interventions of nine months from a study in South Africa (41).

However, the fact that reported condom use in our study increased in 2006 (after a decline in 2004 and 2005), the year that no intervention was done, can be explained by effect of time. Because of the influence of public campaigns against HIV and AIDS from media the effects of the program gets better again. As HIV epidemic is getting older and older, awareness of condoms increased. Our argument is supported by findings from one study conducted from northern Tanzania that primary school children from that area have been exposed to several sources of HIV and AIDS information including mass media (radio and newspapers/magazines) and health workers (18;71;76). Therefore, the influence of other factors in changing sexual behaviour in this era of HIV and AIDS can not be underestimated.

The findings of our study indicated that generally condom use was low for both sexes although, no statistical significant difference was demonstrated among either sexes in all age groups. From prevention point of view these findings suggest existence of increasing risk for HIV infection among primary school pupils. For the program efficacy for future research this implies more efforts should be done to improve condom use for both sexes. However, although significance difference was not attained across all age groups, more males in our study reported to have ever used a condom than females in their respective age groups. Results from a study among 9-24 years pupils in Uganda reported significantly intention to use condom increase among the participants as age increased. Since intention to use condom has been found to correlate with actual condom use it is very correct to say proportion of condom use increase as age increase (37). These findings call for a need to intervene in line with the above mentioned factors in this section that may contribute to low condom use among pupils and therefore increasing protection against HIV through condom use remains a public health priority.

Self efficacy in condom use was found to be one of the important factors influencing condom use among pupils (50). In this study substantial proportion of participants in all age groups reported it was or it will be difficult to use condom when having sexual intercourse. This reflects difficulties in using condoms which may lead to incorrect use of it when having sexual act. Lack of correct use of condoms may be as good as not using it, hence risk of HIV infection. It is important however, to note that self efficacy towards condom use appeared to be the strongest predictor of consistent condom use (77). Results from a recent study from South Africa identified important factors influencing condom use which were: students' self efficacy to use condoms, skills training in obtaining, carrying, negotiating condom use and the confidence to correctly put on and take off a condom can improve students condom use self efficacy and encourage consistent condom use (50). This suggests that pupils with a high level of perceived self efficacy on condom use are more likely to use condoms consistently than those with a low level.

Skills on condom use are important to ensure correct condom use for better results in prevention of HIV infection. These skills have to be taught by teachers for this case and adapted by the users in a long run. However, Findings from evaluation of numerous studies reported that teachers and school authorities tended to inhibit demonstration of condom use in the classes for the reason that it will initiate sexual acts among pupils. Moreover, in those programs teachers did not use the materials on condoms provided and omitted any such information stemming from the programs (37;38;41;78). It is possible that substantial proportion of pupils in our study who reported uneasy

in using condom may be contributed by teachers' negative attitude towards condom. Overall, these findings suggest a need for teachers to have a positive attitude towards condoms, teach skills on condom use and not only provide information.

4.1.4 Trends in condom accessibility

Easy condom accessibility is a partial pre-requisite for condom use; meaning that difficult in accessibility of condom could lead to low use hence increasing risk of HIV infection and other STIs. Our data indicated no significant difference in condom accessibility over survey years. However, proportions of participants reported to access condoms easily rose from 9.5% in 2001 to 30% in 2003. But the trend showed a decline from 30% in 2003 to 26.2% in 2004 which then declined further to 14.6% in 2006. This trend could be explained partially by the fact that during the intervention of out of school youth program; the program (AFYA KWA VIJANA) distributed condoms for free through peer educators, which was seen to result into easy accessibility of condoms among out of school youth. Since in school and out of school youth interact socially out side school boundaries, we believed the strategy could also resulted into easy access of condoms to the former group as well.

People in Kahe access condoms form kiosks and pharmacies where they are sold cheaply and distributed for free in government local health facility. A substantial proportion of participants mentioned retail shops; because these are commercial settings there is no opportunity for pupils to obtain health promotion messages about safer sex or about appropriate use of condoms for HIV and other STIs prevention. On the other hand it has been urged that addressing issues of condom at point of sales may result in additional anxiety or increase the risk of stigmatization and avoidance among some pupils (79).

Although condoms are provided for free in health facilities stigma associated with condom use hinder pupils accessing them. Most of health facilities are not youth friendly. These are contributed by negative attitudes and wrong perceptions that health workers distributing condoms have towards use of condoms among pupils. It is then difficult for pupils and other adolescents to take advantage of this opportunity. Health workers who are in most cases elderly people tend to judge pupils by not supporting their choices to use condoms against HIV, other STIs and unwanted pregnancies. It is important to note here that personal care interactions are part of effective health promotion.

Providing condoms at school is one of the dilemma issues in many societies especially in African countries. Pupils are expected by society not to engage in sexual activities. Parents, religious leaders and teachers have different views on making condom available at school. The fear has been possibility of increasing sexual activities among pupils upon provision of condoms.

In our study, school was least often mentioned as a source for easy access of condoms. Fear and lack of confidence that pupils experienced with school environment may contribute to the substantial proportion of pupils finding difficult selecting school as a better place to access condoms. Teachers' negative attitudes towards condoms might negatively affected pupils preference on school. However, school could be a good source of condom if supported by school authorities, teachers and parents. Nevertheless, as mentioned earlier the argument of promoting sexual activity by making condom available at school is nullified by results of existing literature from western countries where condom distribution in schools did not lead to initiation of sexual activity (60-62). In these studies males were more likely than females to take condoms that were are available at school. Additionally, results from a study in New York suggested that making condom available in high school increases condom use. However, social-cultural differences among developing and developed countries have to be taken into consideration in considering this possibility. Due to contribution of teachers, parents and religion leaders in shaping behaviour of the adolescents it is important to fully involve them in planning and implementation of program activities. Program planners should discuss with the mentioned stakeholders pro and cons of making condoms available at school and educating them whenever appropriate to view the matter in different perspective.

Use of peer educators as distributors of condoms in local school settings was mentioned as an alternative way for other participants to access condoms. Peer educators might help in improving not only the accessibility of condoms to other pupils but also condom awareness since based peer education program help change adolescents risk behaviour because of the influence of peers during adolescence. It was documented that people are more likely to hear and personalize messages and to make changes in their attitudes and behaviors if they believe that the messenger is similar to them and faces the same concerns and issues (80). In order for this kind of intervention to work out adequate training to peer educators that emphasize not only on knowledge, but also skills on demonstration of correct condom use of condom would be needed. From this body of knowledge it is clear that in order to promote condom use, school and community-based interventions are important.

There is embarrassment associated with condoms. People feel embarrassed at different stages of condom use which affects their condom use. In our study we found higher proportion of pupils mentioned feeling embarrassed as a reason for not accessing condoms in 10-13 years age group. The proportion decreased in 14-16 years and rose again in 17-20 years. No significant difference

across age groups was seen. Our findings are similar with those from one study where gender and age were not significantly correlated with purchase embarrassment (81). However, different results was reported from one study that was assessing embarrassment associated with purchasing, carrying, storing using and disposing condoms indicated embarrassment associated with purchasing condoms was found to decrease with age and experience (82). Purchasing condoms elicits the most embarrassment, followed by carrying and disposing, while using and storing are the least embarrassing. Surprisingly, more boys than girls in all age groups reported to feel embarrassed in buying condoms. It was surprising since social cultural construction for most of African communities including Tanzania expects more females to feel embarrassed than males. The explanation behind could be in most sexual relations males are expected to buy condoms and females just don't buy and do not feel responsible to buy and thus are not embarrassed buying them. Although, there was no significant difference across age groups in both sexes, but it is important to note that feeling embarrassed has clear consequences on condom access and use, since embarrassed people do not buy, carry and store condoms (82). Shyness on buying condoms was documented to be a major inhibitor of condom use (37). It is therefore important that great efforts aiming at eliminating stigma across condoms have to be undertaken.

Furthermore, although significant difference could not be demonstrated across the age groups on the locations where pupils can access condoms, but local health care facility was chosen by a substantial proportion as a suitable place to access condoms. Contrary, other studies have suggested health workers may not be suitable agents for condom use promotion among youth due to negative attitudes towards youth sexuality (58). The fact that condoms are provided for free in health facilities could influence the pupils' choice of this place.

Costs were mentioned by a lower proportion of the participants as reasons for not being able to access condoms. Although the settings of our study as described earlier is poor resource area but the fact that condoms are sold cheaply about less than one cent US dollar per packet of three and the perceived risk of HIV infection among participants could make them find cost not to be an obstacle. Similar findings was reported by a study from rural Tanzania where cost was rarely mentioned as a reason why they do not issue condoms (66). These data suggests intervention activities aiming at improving accessibility should focus on other factors that may influence condom use rather than costs.

4.1.5 Comparison of 2001 baseline and 2006 pupils' condom awareness, perceived accessibility and use

Evaluation should be an integral component of any school based sexual health program in order to asses whether the program is appropriate and acceptable, weather it is achieving their respective objectives and whether it is reducing the magnitude of the HIV and AIDS problem (28).
Condom awareness for pupils who have had their sexual debut is considered to be an important step in promoting protective sexual behaviors among them. In our study the proportion of the pupils who knew what a condom is, significantly raised from 2001 to 2006. Although there was significant difference between 2001 and 2006 the overall condom awareness remained low. When condom awareness was adjusted for sex of participants, our findings indicated significantly males were more likely to know what condoms are than their male counterparts.

Age in our study was found to significantly influence condom awareness. Our findings indicated participants in 10-13 years were significantly less likely to know what condoms are than 14-16 and 17-20 years age groups.

Although condom use in general was found to be relative low there was a substantial significant increase from 2001 to 2006. In contrast to the increase in condom use the results of those reported "*it was or it will be easy to use condoms while having sexual intercourse"* in year 2006 was significantly low than in 2001. Possibly reluctance of teachers to demonstrate condom use may have contributed to pupils' low level of self efficacy in using condom. This suggests that more knowledge and information was delivered during intervention which could not improve skills in condom use.

Results from adult population study in Tanzania found age and sex to influence condom use (14); in analysis of our data we took control of these confounders. Our findings revealed age did not significantly influence condom use, but year and sex were found significantly to influence condom use.

A review by Kaaya identified that various studies that reported positive impact in intervention activities among school children were characterized by length of intervention among other characteristics of effective intervention program (33). Hence in order to bring positive impact of protective sexual behaviour including condom use longer period in intervention is desired. The study found there was significant increase in use of condoms from 2001 to 2006. Despite this

increase condom use is still relative low, although the significant difference was achieved, which could be contributes by a large sample size of our study(55).

Significantly, pupils in 2006 reported relatively high accessibility to condoms compared to 2001. This low accessibility among 2001 survey participants reflects partially low condom use in their year. The substantial proportion of participants in 2006 that found easier accessing condoms may be explained due to the fact that condoms are now available from local health centre free of charge and from retail shops cheaply.

4.2 Conclusion

Condom promotion among sexually active school pupils is an effective means in prevention of HIV infection. However, condom use among pupils being a debatable topic in African settings, for programs aiming at address this risk reduction strategy should therefore get prepared to face challenges in school and community. Involvement of stakeholders like teachers, parents and community leaders at early stage of project planning will help to gain their cooperation in intervention activities. Teachers should be trained to adjust their attitudes that might interfere with their obligations to teach skills.

The lesson to be learned from this study is that AFYA KWA VIJANA program succeeded to bring modest change over time on condom awareness, accessibility and use. The trend has been directing towards decline of risk behaviour and increase in protective sexual behaviour. Although the progress was relative slow, but the described trend gives light in adjusting implementation of school program with a focus on condom promotion not only in Tanzania rural setting but Africa at large. Sex differences in condom awareness, accessibility and use should be taken into consideration to address males and females specific needs.

The findings of this study provide clear evidence that since interventions appeared to have had favorable impact in terms of improving pupils' awareness on condoms but not condom use, more have to be done. These findings also indicate the need to change the focus of interventions from teaching correct information on prevention of HIV and other STIs to redirect their efforts and resources by implementing appropriate intervention strategies that recognize the need of pupils having skills on correct condom use and assuring easy access of condoms. Work to increase condom use needs to proceed through education and prevention programs, by increasing condom availability, by improving pupils' attitudes towards and ability to use condoms.

4.3 Future perspectives

In order to assess condom awareness, more sensitive measures should be used for future research in order to truly assess the different levels of awareness. The significant age differences that exist only among females on condom awareness, but not to their male counterparts, deserve further study in order to explain this disparity. Pupils uneasy in using condoms, which may result from teachers not demonstrating condom to pupils as described in this document, leads to a crucial recommendation for further programs: to ensure teachers are motivated to change their attitudes and interests to have positive view on condom. Moreover, in order to expect better results of intervention, the activities should last from six months onwards.

To avoid peer educators shortage there could be a system where peer educators educate new peers before they complete their education. In so doing there will be always peer educators. Since other sources of information like media could have confounding effect on our results in condom awareness future research should explore media usage and content. For example investigating which media pupils get their information about condoms from do they have somebody to talk to with about sexual issues? Who is it?: Parents, mother or father, friend, sister/brother same/different sex or other relatives.

Overall, the findings from this study suggest a need for teachers to have a positive attitude towards condoms, teach skills on condom use and not only provide information.
The data presented in this work indicates reported condom use was low despite the awareness levels. This implies there might be other psychosocial factors which inhibit use of condoms among the pupils. Therefore, there is a need for further research to identify these factors.

4.4 Strengths and limitations of the study

Strengths

The study used a quantitative method which allows quantification and generalization of the findings. The study had a large sample size and the participation rate was high (96%) hence a selection bias which could have been introduced if behaviour of missing pupils in the day of survey differed from those participated, did not exist. The fact that this study used self administered questionnaire increases its credibility of getting honest responses. The self-administration of the questionnaires assures confidentiality, also in the perception of the respondents. So they are more likely to be honest in answering the sensitive questions regarding sexuality.

Limitations

However, before going to substantive discussion and in the interpretation of these results it is worthy noting the following limitations. With respect to methodology aspects on the sample, on reliability and validity of self reports and on social desirability bias, reporting bias as well as on the data collection instrument will be discussed before interpreting the findings itself.

Sample size: Study participants were conveniently sampled rather than randomly sampled; one may think of limitations in making generalization on the basis of these results, description of the trend in the desired population was rather intended. Since the sample was from entirely on a sample of in-school children these results therefore; do apply only to children who attend primary school and not for out of school though may be in the same age range and therefore not representative of all persons in this age group. Research conducted from other parts of Africa reported conflicting results that out of school adolescents undertake more or less risk sexual behaviors. Research has to be done for nomads and street children, i.e. children of this sensitive and important age not attending schools at all or not attending them regularly.

Findings from a study from Botswana revealed that school enrollment reduce the likelihood of sexual activity among females, but not clear evidence was reported among males (64). In addition data from rural Tanzania showed no evidence that education influenced the degree of risk sexual behaviour among young women and men (29).

Since Kahe is representative of many rural settings with limited resources in Tanzania and Africa at large, these data should apply to African circumstances for rural pupils in poor regions, but for city and towns further research might be necessary.

Regarding ***reliability and validity of self reports of sensitive issues:*** The following aspects have to be considered: these data were self reported by pupils, their accuracy is therefore difficult to validate. Sexuality issues are sensitive in any population due to their sensitivity there may be considerable difference between actual sexual activity and report on sexual activity. From experience and other studies it can be assumed that female sexual behavior may be underestimated, especially in Tanzania women tend to underreport their sexual behavior and males do the opposite. i.e. over report on their sexual power and activity according to traditional role ascriptions presented in chapter one (12;14;28).

However some biases worthy mentioning: *Social desirability bias* which is inclination to present oneself in a manner that will be viewed favorably by others in other words participants in any research they feel obliged to provide "socially desirable" answers or what they perceive as such. In particular, in social research this is thought of affecting the assessment of trends in behaviour over time (17). Thus interviewing pupils after having received intervention aiming at promoting condom use, these pupils may be tempted to give socially acceptable answers in this case "condoms are known", "use is easy", "access is easy", and "I have ever used condoms". But we think this threat might have been removed due to the fact that the self- administered questionnaires which ensure participants privacy were used for data collection. Social desirability bias seems to be enhanced when responses are made directly to an interviewer from whom the respondents "fear" social pressure (65). Having privacy and also their feeling of not being controlled, it can be assumed that quite honest answers close to reality have been given. However, some researchers have attempted to increase the validity of self reported sensitive information through qualitative means (66). This could not be done in this study due to logistic issues one, doing qualitative study would mean interviewing individuals who were pupils in 2001-2005 which was not feasible as majority are not in the village.

Reporting bias may be a threat in the study presented here as one could speculate that pupils were more likely to underreport their own sexual behaviors as the sex educations programs in school, researchers and community at large insist much on abstinence as the only way of preventing pregnancy and STIs. Furthermore, pupils in Tanzania do fear expulsion from school in case of becoming parents. This consequence, of course is much more likely to happen to girls than to boys as it is much more difficult to hide a pregnancy than to neglect father-ship. Nevertheless, the consistency of the results across many variables in this study supports the value of self report of sexual behaviors especially if combined with self-administration.

Confounding occurs when a covariate is associated with both the outcome and exposure variables. In our study, confounding was addressed by using multivariate analysis. There are possible confounding variables which have not been included, e.g. other sources of information like mass media e.g. radio, television and newspapers could influence pupils' awareness on condom.

The data collection instrument itself, the questionnaire, has some limitations. Since some of the data used in this study were secondary data, some variables could not be assessed through the whole time period and not with enough detail. Despite examining data from six school-based surveys, it was only possible to report a few variables on condom awareness, accessibility and use because of the lack of consistent measures over the whole time span. It was required that data on all surveys (2001 to 2006) to be complete and consistent. Hence, some variables included one or a few years were then dropped from further analysis.

Condom awareness was assessed using a single item "do you know what a condom is?" We might have detected more accurate information if multiple items or scales were used leading then to greater reliability. For example; the question "what a condom is used for?" could be explored further from participants who reported to know what a condom was. Although this proposed question might have condom knowledge component in it. Furthermore, in addition to assessing condom use among pupils, a question could assess "condom use at last sexual encounter" and also gather information regarding time frame of condom use e.g. "condom use at last intercourse", "condom use during the last 3 or 6 months". Moreover, with regard to condom use for those who have ever used it, it is worth asking further "how often they used condoms", since consistent condom use is desired if HIV prevention is to be effective.

Furthermore, although care was taken to minimize confusion from respondents on the questions, we acknowledge that wording and structuring of some questions may be hard to understand especially taking the cultural contexts into account. For example, self-efficacy on condom use was assessed by asking how easy or hard is it for you or it will be using condom when having sexual intercourse, female respondent may mistakenly reply “hard”. Women might perceive it is men’s responsibility to use a condom. The scenario where women help their partners to put on a condom as a part of expressing affection might not be part of Tanzanian or even African socio-cultural context. (It could even have be a nightmare to the pupils interviewed). Likewise in a question like “have you ever used a condom?” can be misunderstood. *Using a condom* may be interpreted by female respondents as “putting on a condom (on them) and have sex with it”. Because male condoms have to be put on the males’ genitals, a female respondent may answer *no* because they never put condoms on themselves nor on their partners penis. But still females might have had sexual intercourse with men who had put on a condom. Another point is that, younger pupils (10-13 years) may have difficulties in understanding the questions resulting in either underreporting or over reporting of their sexual behaviour especially when not yet having sex, because then they are answering according to what they *think* is going to be their real action.

Despite these limitations this study should provide some initial insights on the progress of adapting protective sexual behaviour and perceptions on condoms among pupils useful for future intervention planning process. Even if a bias through social desirable response happened, if there is a trend to be found we think the pressure of social desirability might contribute to real change in attitudes and behaviour.

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ANNEX 1 Questionnaire

ANNEX I: Questionnaire

The questionnaire to the participants

Primary school

Grade six and seven pupils

Kahe wards, Kilimanjaro region

Tanzania

Department of Epidemiology & Biostatistics

Muhimbili University College of Health Sciences

The Kahe Community Study: Primary School Children Health Survey

2006

INTRODUCTION

This is a study of what adolescents of your age think about their health situation and factors that influence their own health. In addition to asking you a number of questions relating to your own habits, we also would like to measure your height and weight. We are hoping to use all of this information to make better programs to meet the educational and health needs of young people in Tanzania. Please read each question carefully and show your answer by filling out the blanks or by marking with a tick (✔) the number next to your choice from the list of response options. ***Please, this is not a test***. We are only interested in your own thoughts, so please do not ask your fellow students what to answer. If you have questions about any of the items, please raise your hand and ask the project staff presents in the classroom.

It is voluntary for you to participate in this study. You can withdraw from the study at any time, and you can also skip questions that you find too personal to answer. Please do not write your name on this questionnaire. The questionnaire is completely anonymous, and nobody from your school, neighbors or family will see your answers. Please read all the instructions carefully, and answer each question as best you can.

THANK YOU FOR YOUR HELP

SCHOOL NAME and NUMBER: _____

These first questions are about you and your family. Please read each question carefully and answer by checking off the box that is right for you or filling in the appropriate number.

1. Are you a boy or a girl?

Boy [ ]
Girl [ ]

2. How old are you? _____ years

3. What grade are you in?

□ 6th grade

□ 7th grade

4. What is your religion?

□ Christian - catholic

□ Christian - protestant

□ Islam

□ Other:
_____

5. What is your tribe?

□ Chagga

Pare
Mkahe
□ Masai

□ Meru

□ Arusha

□ Other: _____

6. How many people all together, including yourself, live in your home (household)?

_____ people

7. How many siblings do you have at home? _____ siblings

8. What is your father's job?

□ Peasant farmer

□ Employed civil worker (teacher, health care worker etc.)

□ Businessman/trader

□ Factory worker

□ Other-
_____

□ I do not have a father

9. What education has your father?

□ No formal education

□ Primary education

□ Secondary education

□ Higher education

□ I do not have a father

10. What is your mother's job?

□ Peasant farmer

Employed civil worker (teacher, health care worker etc.)
□ Businesswoman/trader

□ House keeper

□ Factory worker

□ Other-
_____

□ I do not have a mother

11. What education has your mother?

□ No formal education

□ Primary education

□ Secondary education

□ Higher education

□ I do not have a mother

12. Does your family have a radio at home?

□ Yes

□ No

13. Does your family have a bicycle at home?

□ Yes

□ No

14. Does your family have a motorcycle at home?

□ Yes

No
15. What kind of roof does your house have?

□ Corrugated

□ Thatched

16. How many rooms are there in your home?

_____ rooms

17. How many people besides you sleep in the room with you at night, when you are at home?

_____ people

18. How do you consider your economic situation at home? Please mark the statement that best describes your situation of the following:

□ We are among the well-off in the area

We are not rich, but we manage to live well
We are neither rich nor poor, but just about average
□ We struggle with the strict minimum required to make ends meet

19. How often do you listen to a radio?

□ Every day

□ Several times a week, not every day

□ Once a week

□ Less than once a week

Never
20. How often do you watch TV or video?

□ Every day

□ Several times a week, not every day

□ Once a week

□ Less than once a week

□ Never

21. How often do you read newspapers/ magazines?

□ Every day

□ Several times a week, not every day

□ Once a week

□ Less than once a week

□ Never

22. Do you ever travel to Moshi town?

□ Yes, often

□ Yes, occasionally

□ No, never

23. Do you ever go across the border to Kenya?

□ Yes, often

□ Yes, occasionally

□ No, never

24. Are you involved in any business?

□ Yes

No

The next questions are about how you think about school.

25. What do you think you will be doing when you finish primary school?

□ Attend secondary school

Go to trade school, vocational or courses

□ Get a paid job

□ Start a business

□ Become a peasant farmer

□ I will probably be unemployed

26. How do you like being at school at present?

□ I do not like it at all

□ I do not like it very much

□ I like schooling a bit

□ I like being at school very much

27. In your opinion, what do you think your class teacher thinks about your school performance compared to that of your classmates?

□ He/she thinks I am doing very poorly

□ He/she thinks I am doing below average

□ He/she thinks I am about average

□ He/she thinks I am doing above average

□ He/she thinks I am doing very well

We now want to know to what extent you think the following problems are threats against your health in your home and your school environment. Please mark only one answer for each question.

28. To what extent do you think poverty is a threat against your health?

□ It is a very great threat

□ It is quite a threat

□ It is not a great threat

□ It is not a threat at all

29. To what extent do you think food shortage is a threat against your health?

□ It is a very great threat

□ It is quite a threat

□ It is not a great threat

□ It is not a threat at all

30. To what extent do you think AIDS is a threat against your health?

□ It is a very great threat

□ It is quite a great threat

□ It is not a very great threat

□ It is not a threat at all

The following questions and statements are about how you feel about yourself and your life. Mark only one question/response for each question/ statement.

31. In general, how do you feel about your life?

□ I feel very happy

□ I feel happy

□ I feel not very happy

□ I do not feel happy at all

32. In general, how do you think about yourself?

□ I am very satisfied

□ I am quite satisfied

□ I am not very satisfied

□ I am not satisfied at all

33. I often feel sad (depressed) without knowing why.

□ I completely agree

□ I agree

□ I agree to some extent

□ I do not really agree

□ I definitely do not agree

34. Sometimes I feel everything is so hopeless, that I do not want to do anything.

□ I completely agree

□ I agree

□ I agree to some extent

□ I do not really agree

□ I definitely do not agree

35. I do not think I have anything to look forward to.

□ I completely agree

□ I agree

□ I agree to some extent

□ I do not really agree

□ I definitely do not agree

36. I think my life for the most part is rather sad.

□ I completely agree

□ I agree

□ I agree to some extent

□ I do not really agree

I definitely do not agree

37. I am often sad even without seeing any reason why.

□ I completely agree

□ I agree

□ I agree to some extent

□ I do not really agree

□ I definitely do not agree

38. Some times I have been thinking that my life is not worth living.

□ I completely agree

□ I agree

□ I agree to some extent

□ I do not really agree

□ I definitely do not agree

39. In my family we support each other.

□ I completely agree

□ I agree

□ I agree to some extent

□ I do not really agree

□ I definitely do not agree

40. My father and I communicate well.

□ I completely agree

□ I agree

□ I agree to some extent

□ I do not really agree

□ I definitely do not agree

41. I enjoy being with my parents.

□ I completely agree

□ I agree

□ I agree to some extent

□ I do not really agree

□ I definitely do not agree

42. My parents really know most of my friends that I spend time with outside school.

□ I completely agree

□ I agree

□ I agree to some extent

□ I do not really agree

□ I definitely do not agree

43. My parents encourage and support me.

□ I completely agree

□ I agree

□ I agree to some extent

□ I do not really agree

□ I definitely do not agree

44. My mother and I communicate well.

□ I completely agree

□ I agree

□ I agree to some extent

□ I do not really agree

□ I definitely do not agree

45. How do you think of yourself?

□ Very underweight

□ Slightly underweight

□ About the right weight

□ Slightly overweight

□ Very overweight

46. How do you think your classmates think about you?

□ They like me a lot

□ They like me

□ They don’t like me very much

□ They don’t like me at all

47. How do you think your mother thinks about you?

□ They like me a lot

□ They like me

□ They don’t like me very much

□ They don’t like me at all

48. How do you think your father thinks about you?

□ They like me a lot

□ They like me

□ They don't like me very much

□ They don't like me at all

49. How easy is it for you to talk to your closest friend about things that really bother you?

□ very easy

□ easy

□ difficult

□ very difficult

50. How easy is it for you to talk to your father about things that really bother you?

□ very easy

□ easy

□ difficult

□ very difficult

51. How easy is it for you to talk to your mother about things that really bother you?

□ Very easy

□ Easy

□ Difficult

□ Very difficult

52. How easy is it for you to talk to a health care worker about things that really bother you?

□ Very easy

□ Easy

□ Difficult

□ Very difficult

53. How easy is it for you to talk to one of your teachers about things that really bother you?

□ Very easy

□ Easy

□ Difficult

□ Very difficult

54. How easy is it for you to talk to a religious leader about things that really bother you?

□ Very easy

□ Easy

□ Difficult

□ Very difficult

The following questions are about different types of behaviors. Try to answer each question as honest as possible. Mark only one response option for each question.

55. Outside school hours, how often do you usually exercise so much that you get out of breath or sweat?

□ Every day

□ 4-6 times a week

□ 2-3 times a week

□ Once a week

□ Once or twice a month

□ Never

56. How often in the past three months have you smoked cigarettes?

Every day
Every week
A few times
Never

57. How often in the past three months have you been drinking alcohol (pombe, beer, wine, or liquor)?

□ Every day

□ Every week

□ A few times

□ Never

58. How often in the past three months have you smoked hashish or marijuana (bangi)?

□ Every day

□ Every week

□ A few times

□ Never

59. During the past year (12 months), have you bullied anyone at school?

□ Yes

□ No

60. During the past year (12 months), have you been bullied at school?

□ Yes

□ No

61. If yes, by whom have you been bullied?

□ boy(s)

□ girl(s)

both boy(s) and girl(s)
I have never been bulled

62. During the past year (12 months), have you been involved in any physical fights?

□ yes

□ no

63. In your class, about how many pupils do you think have had their sexual debut?

□ none

□ some, but less than ¼

□ about ¼

□ about half of them

□ about ¾

□ almost all of them

64. Among people of your age who are sexually active, about how many do you think use a condom when having sexual intercourse?

□ none

□ some, but less than ¼

□ about ¼

□ about half of them

□ about ¾

□ almost all of them

The following questions are about sexual transmitted diseases and HIV and AIDS. Please indicate if you think these statements are correct or wrong:

65. Gonorrhea is a sexually transmitted diseases

□ Yes, correct

□ No, wrong

□ I do not know

66. Sexually transmitted diseases increase the chance of becoming HIV-infected

□ Yes, correct

□ No, wrong

□ I do not know

67. Most sexually transmitted diseases cannot be cured

□ Yes, correct

□ No, wrong

□ I do not know

68. Correct use of condoms when having sex can prevent you from getting sexually transmitted diseases

□ Yes, correct

□ No, wrong

□ I do not know

69. A person can get the AIDS virus by shaking hands with someone who has this virus

□ Yes, correct

□ No, wrong

□ I do not know

70. A person can get the AIDS virus and not show signs of the disease

□ Yes, correct

□ No, wrong

□ I do not know

71. A person who looks healthy, but has the AIDS virus can pass it on to other people

□ Yes, correct

□ No, wrong

□ I do not know

72. A person can get the AIDS virus by being bitten by a mosquito which has already bitten a person with this virus

□ Yes, correct

□ No, wrong

□ I do not know

73. A person can get the AIDS virus by hugging someone who has this virus

□ Yes, correct

□ No, wrong

□ I do not know

74. One can tell if a person has the AIDS virus by the way he or she looks

□ Yes, correct

□ No, wrong

□ I do not know

75. Do you know anyone in your community who is HIV infected?

□ yes

□ no

76. Do you know anyone in your village who has died of AIDS?

□ yes

□ no

Please answer how strongly you agree or disagree to the following statements

77. AIDS is the most dangerous disease in Kilimanjaro

□ I strongly agree

□ I agree

□ I disagree

□ I strongly disagree

78. It is unlikely that I will ever get AIDS

□ I strongly agree

□ I agree

□ I disagree

□ I strongly disagree

79. AIDS is a very dangerous disease

□ I strongly agree

□ I agree

□ I disagree

□ I strongly disagree

80. I am really afraid of getting AIDS

□ I strongly agree

□ I agree

□ I disagree

□ I strongly disagree

81. I would go and visit a friend if I knew that he/she had the AIDS virus

□ I strongly agree

□ I agree

□ I disagree

□ I strongly disagree

82. Pupils with the AIDS virus should be allowed to attend school with other children

□ I strongly agree

□ I agree

□ I disagree

□ I strongly disagree

83. I would continue to be a friend with someone who has the virus

□ I strongly agree

□ I agree

□ I disagree

□ I strongly disagree

84. I would be happy to take care of a relative who has AIDS

□ I strongly agree

□ I agree

□ I disagree

□ I strongly disagree

85. My parents would be upset if they found out that I am having sex with someone

□ I strongly agree

□ I agree

□ I disagree

I strongly disagree

86. Most of my friends think I should have sexual intercourse

□ I strongly agree

□ I agree

□ I disagree

□ I strongly disagree

87. My relatives would be upset if they found out that I am having sex with someone

□ I strongly agree

□ I agree

□ I disagree

□ I strongly disagree

88. My best friend thinks it is all right if I have sex

□ I strongly agree

□ I agree

□ I disagree

□ I strongly disagree

89. Most people I know think people my age should not engage in sexual intercourse

□ I strongly agree

□ I agree

□ I disagree

□ I strongly disagree

90. Our religious leader think people my age should not have sex

□ I strongly agree

□ I agree

□ I disagree

□ I strongly disagree

91. My teachers are strongly against people my age having sexual intercourse

□ I strongly agree

□ I agree

□ I disagree

□ I strongly disagree

92. Most of my school friends think one has to be older before having sex

□ I strongly agree

□ I agree

□ I disagree

□ I strongly disagree

93. By not having sex until I am older, I can avoid a lot of trouble

□ I strongly agree

□ I agree

□ I disagree

□ I strongly disagree

94. It is easier to be accepted by your friends if you have sexual intercourse

□ I strongly agree

□ I agree

□ I disagree

□ I strongly disagree

95. For me, having sex would be the best way to tell someone I am in love

□ I strongly agree

□ I agree

□ I disagree

□ I strongly disagree

96. If you do not have sex you do not get invited to the popular parties

□ I strongly agree

□ I agree

□ I disagree

□ I strongly disagree

97. You get more attention from others if you are willing to have sexual intercourse

□ I strongly agree

□ I agree

□ I disagree

□ I strongly disagree

98. I would feel more grown-up if I had sexual intercourse

□ I strongly agree

□ I agree

□ I disagree

□ I strongly disagree

99. For me, trying to have sex would be very exciting

□ I strongly agree

□ I agree

□ I disagree

□ I strongly disagree

100. If I had sexual intercourse, people would have less respect for me

□ I strongly agree

□ I agree

□ I disagree

□ I strongly disagree

101. Do you agree that you can refuse to have sex if you don't want to have sex?

□ I strongly agree

□ I agree

□ I disagree

□ I strongly disagree

102. Do you agree that you are able to decide to wait until you are old enough to have sexual intercourse

□ I strongly agree

□ I agree

□ I disagree

□ I strongly disagree

103. Do you agree that it is easy for you to refuse having sex with friends who give you presents for sex

□ I strongly agree

□ I agree

□ I disagree

I strongly disagree

104. Do you agree that if your best friend wants to have sex with you, you will find it easy to refuse

□ I strongly agree

□ I agree

□ I disagree

□ I strongly disagree

105. Do you agree that if someone much older than you wants to have sex with you, you will find it easy to refuse

□ I strongly agree

□ I agree

□ I disagree

□ I strongly disagree

106. Do you agree that if you are at a party and someone you like wants to have sex with you, you will find it easy to refuse?

□ I strongly agree

□ I agree

□ I disagree

□ I strongly disagree

We will now ask you some personal questions regarding intimate and sexual behaviour. Remember that your answers will be treated strictly confidential.

107. Have you ever hugged or kissed a boy- or girl friend?

□ yes

□ no

108. Have you ever had sexual intercourse? (This means intimate contact with someone of the opposite sex during which the penis enters the vagina (female private parts)).

□ yes

□ no

109. If you have had sexual intercourse, how old were you when you did so for the first time?

□ _____ years

□ I have never done sex yet

110. Have you ever had sexual intercourse with someone that you met for the first time the day that you had sex?

□ yes

□ no

111. With how many different partners have you had sexual intercourse in the past year (12 months)?

□ none

□ 1 partner

□ 2-4 partners

□ 5-9 partners

□ 10 or more partners

112. On the last occasion that you had sexual intercourse, what age was you partner?

□ _____ years

□ I have never done sex

113. Do you know what a condom is?

□ yes

□ no

114. Have you ever used a condom?

□ yes

□ no

If yes

115. How often do you use condom when sexually active?

□ Always

□ Usually

□ Occasionally

Never
I have never had sexual intercourse

The following questions are about communication with your parents, friends and partner about condom use.

116. How often do you talk to your parents or guardians about condoms?

□ Never

□ Hardly ever

□ Sometimes

□ A lot

□ All the time

117. How often do you talk to your friends about condoms?

□ Never

□ Hardly ever

□ Sometimes

□ A lot

□ All the time

118. How often do you talk to your partner about condoms?

□ Never

□ Hardly ever

□ Sometimes

□ A lot

□ All the time

To what extent do you agree or disagree with the following statements:

119. Using a condom is like eating a candy with the paper on

□ I strongly agree

□ I agree

□ Neither agree nor disagree

□ I disagree

□ I strongly disagree

120. Using a condom feels like accusing partner of infidelity
□ I strongly agree

□ I agree

□ Neither agree nor disagree

□ I disagree

□ I strongly disagree

121. I do not use condom because I feel embarrassed to buy it

□ I strongly agree

□ I agree

□ Neither agree nor disagree

□ I disagree

□ I strongly disagree

What is your opinion on the following statement?

122**.** I am likely to get HIV-infected if I have sex without using condom

□ Strongly agree

□ Agree

□ Neither agree nor disagree

□ Disagree

□ Strongly disagree

123. Imagine that you are going to have sexual intercourse, how likely is it that you would use a condom?

□ Very likely

□ Likely

□ Not likely or unlikely

□ Unlikely

□ Very unlikely

What is your opinion on the following statement?

124. Using condom is a way of expressing responsibility for my partner and myself

□ Strongly agree

□ Agree

□ Neither agree nor disagree

□ Disagree

□ Strongly disagree

125**. What is your opinion on the following statement?**

I would be able to refuse to have sex if my partner did not want me to use a condom

□ Strongly agree

□ Agree

□ Neither agrees nor disagrees

□ Disagree

□ Strongly disagree

126. Have you ever had sex without using a condom?

□ Yes

□ No

□ I have never had sex

127. Where do you prefer condom to be for you?

□ At my school

□ In local retail shops

□ Local health care facility

□ Somewhere else mention

_____

128. Sometimes adolescents want to use condom but they can not get condom, what do you think could be the reason (check the **ONE** reason you think is the most important)

□ Condoms are very expensive

□ They feel embarrassed to buy condoms

□ Condoms are not available

Don't know
Other reasons; please mention……
……

129. How easy or hard it is for you/do you think it will be to use a condom when having sexual intercourse?

□ Easy

□ Not sure

□ Hard

130. If you want to use a condom, how easy would it be for you to get hold of one?

□ Very easy

□ Easy

□ Difficulty

131. Last time you had sexual intercourse, did you or your partner do or use anything to prevent pregnancy or disease? Please mark more than one if necessary?

□ I have never had sexual intercourse

□ No, we did not do/use anything

□ Yes, we used condom

□ Yes, the pill

□ Yes, withdrawal

□ Yes calendar/rhythm method

□ Other (specify):

_____

Now follows a question regarding your health situation

132. Compared to other people of your own age, how healthy would you say that you are?

□ very poor health

□ poor health

□ good health

very good health

The next questions are about young people's involvement in your community

133. To what extent do people your age in your village participate in sport and recreation?

□ very much so

□ some

□ not very much

□ not at all

134. To what extent do people your age in your village participate in economic activities in the village?

□ very much so

□ some

□ not very much

□ not at all

135. To what extent do people your age in your village participate in health promotion activities?

□ very much so

□ some

□ not very much

□ not at all

136. To what extent do people your age in your village participate in defense and security of the community?

□ very much so

□ some

 not very much

 not at all

137. To what extent do people your age in your village participate in leadership and community management?

 very much so

 some

 not very much

 not at all

138. People my age are involved in planning and setting priorities regarding community activities concerning youth.

 I fully agree

 agree

 disagree

 I completely disagree

139. People my age play an important role in how my community is run.

 I fully agree

 agree

 disagree

 I completely disagree

There are many different ways to make a decision or a choice. Thinking about decision or choices that you have made in the past year, how often have you done the following to help you decide or choose:

140. Talked to your parents?

 6Never

 Hardly ever

 Sometimes

 Often

 Very often

141. Talked to your best friend?

 Never

 Hardly ever

 Sometimes

 Often

 Very often

142. Thought about the consequences of each choice?

 Never

 Hardly ever

 Sometimes

 Often

 Very often

143. Thought about who is influencing your decision?

 Never

 Hardly ever

 Sometimes

 Often

 Very often

People have different ways of talking to each other. How hard or easy is it for you to:

144. Ask a favor of someone?

 Easy

 Not sure

□ Hard

145. Apologize when you have done something wrong?

□ Easy

□ Not sure

□ Hard

146. Admit when you are afraid and ask for help?

□ Easy

□ Not sure

□ Hard

147. Tell a friend when he or she does something that bothers you?

□ Easy

□ Not sure

□ Hard

148. Compliment a friend?

□ Easy

□ Not sure

□ Hard

149. Tell a person when you feel like he or she has done something that is unfair to you?

□ Easy

□ Not sure

□ Hard

150. Resist pressure to drink alcohol?

□ Easy

□ Not sure

□ Hard

151. Resist pressure to smoke a cigarette?

□ Easy

□ Not sure

□ Hard

152. Resist pressure to smoke marijuana?

□ Easy

□ Not sure

□ Hard

153. Resist pressure to get into a physical fight?

□ Easy

□ Not sure

□ Hard

154. Resist pressure to have sexual intercourse?

□ Easy

□ Not sure

□ Hard

155. Continue to talk to someone who disagrees with you?

□ Easy

□ Not sure

□ Hard

156. Ask a person who is bothering you to stop?

□ Easy

□ Not sure

Hard

How easy or hard would it be for you to do the following things?

157. Exercise regularly?

□ Easy

□ Not sure

□ Hard

158. Eat a healthy diet?

□ Easy

□ Not sure

□ Hard

159. Attend a health care facility when sick or needing advice/council?

□ Easy

□ Not sure

□ Hard

160. Caring for a HIV-positive friend or relative?

□ Easy

□ Not sure

□ Hard

161. Say “no” if you were offered a cigarette by a friend?

□ Easy

□ Not sure

□ Hard

162. Say “no” if you were offered a alcohol by a friend?

□ Easy

□ Not sure

□ Hard

163. Say “no” if you were offered a marijuana by a friend?

□ Easy

□ Not sure

□ Hard

164. Avoid a physical fight if someone wanted to start a fight with you?

□ Easy

□ Not sure

□ Hard

Ahsanteni sana!

UNIVERSITY OF OSLO
FACULTY OF MEDICINE

To the relevant authorities

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Date: June 23rd 2006
Your ref.:
Our ref.:

Ethical Review

Investigator's name: Khalfani, Hafsa Omari

Title of the project: Trend in condom awareness, accessibility and use for school adolescents in the Kane wards, Kiliamnjaro

Due to a re-organization in the Norwegian system for ethical review of research students' projects involving a second country, the project proposal has not been subject to a national review process this year.

The students have filled in the ordinary national form for ethical review of research projects involving human subjects and supplied the protocol for their project. A group of experts (medical research ethics, medical anthropology and clinical medicine) in our department have read the applications carefully and made their comments. The investigator's project is found to abide to international regulations, and the comments (below) are to guide the investigators to clarify, elaborate or modify some point(s) before they apply to their national authorities. In case there are such comments in this letter, the investigator's application will be corrected accordingly.

Comments of the reviewers:
I. what is the estimated age of the students (grade 6 and 7 students)? Is it not important to have paternal consent ? If not what is the justification?

II. I think the questioner need some modification because it is too detail and give the student puzzling information like oral sex, anal sex, sexual activity with same sex , etc.

Yours sincerely,

Gunnar Bjune,
Professor International Health
Head of M.Phil. education in International Community Health

M.PHIL PROGRAMME
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Please in reply quote
Our Ref. No…**NUFU/2007/6**

12th May 2007

To Whom it May Concern

Re: Ethical Clearance MPhil Fieldwork Projects: Mrs Hafsa Waziri and Mr. James M. Juma

Please the above heading refers.

This is to confirm that the above-mentioned candidates have been our project staff on our NUFU supported project entitled "**Health Systems Research and Health Promotion in Relation to Reproductive Health in Tanzania**". Since the fieldwork for their MPhil theses was part of the larger project, they used the ethical clearance certificate that was issued to the NUFU project by the National Ethical Clearance Committee in Tanzania.

Being the principal investigator of the main NUFU project, may I request you to accept a copy of the original ethical clearance certificate to be used for the purpose of publishing articles in peer reviewed journals and dissertations/theses production.

Thank you very much for your assistance in this matter.

Yours sincerely

Kamuyika

Kagoma S. Muyika MD, MSc, Ph.D.
Principal Investigator, NUFU Project

THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF HEALTH

Telegrams: **"AFYA"** Dar es Salaam
Telephone: 2120261
(All letters should be addressed to
The Permanent Secretary)
In reply please quote:

Ref. No. **HED/70/107/235**

P.O. Box 9083
DAR ES SALAAM.

National AIDS Control Programme,
P.O. Box 11857,
DAR ES SALAAM, TANZANIA
Tel: 2118581
Fax: 2138282
E-mail: admin.nacp@raha.com
Date: May 21, 2001

CLEARANCE CERTIFICATE FOR CONDUCTING MEDICAL RESEARCH IN TANZANIA OR FOR PUBLISHING THE FINDINGS THEREOF

This is to certify that the research proposal bearing the title:

" An Intervention Study Among Young People in Kahe: A Community Health Development Project 2001-2006"

by Kagoma S. Mnyika as principal investigator has been granted clearance to be conducted in Tanzania with the following conditions:

1. **The Principal Investigator should put emphasis on issues raised by reviewers.**
2. **A six monthly progress report must be submitted to the NACP.**

N.B A six monthly progress report must be submitted to the Ministry of Health for all studies conducted in Tanzania.

A. G. L. Hoyds

CHIEF MEDICAL OFFICER
12 June 2001

Kahe-rsch/08